В. А. ДИТКИН
А. П. ПРУДНИКОВ

СПРАВОЧНИК ПО ОПЕРАЦИОННОМУ ИСЧИСЛЕНИЮ

В. А. ДИТКИН, А. П. ПРУДНИКОВ

СПРАВОЧНИК
ПО ОПЕРАЦИОННОМУ ИСЧИСЛЕНИЮ

ИЗДАТЕЛЬСТВО «ВЫСШАЯ ШКОЛА»
Москва—1965

ОГЛАВЛЕНИЕ

ПРЕДИСЛОВИЕ

Настоящий справочник по операционному исчислению содержит таблицы формул операционного исчисления, т. е. таблицы прямого и обратного интегрального преобразования Лапласа — Карсона.

Возможность составления таблиц формул операционного исчисления, содержащих различные функции, часто встречающиеся в приложениях, является существенным преимуществом операционного метода. В процессе применения операционного исчисления к решению конкретных задач обычно получаются операционные соотношения, которые в дальнейшем могут быть использованы при решении различных проблем. Поэтому таблицы формул прямого и обратного интегрального преобразования Лапласа имеют обширную область приложений, охватывающую собой самые разнообразные отрасли знаний: математику, физику, механику, электротехнику и т. д.

Основным таблицам операционного исчисления предшествует перечень обозначений специальных функций и некоторых постоянных. Обозначения специальных функций и постоянных в этом перечне следуют в алфавитном порядке, причем вначале размещены обозначения, начинающиеся латинскими буквами, а после них — уже обозначения, начинающиеся греческими буквами.

Для удобства пользования справочником классификация формул сделана как на «языке оригиналов», так и на «языке изображений». В соответствии с этим все операционные формулы расположены в виде двух колонок.

В первой главе в левой колонке приводятся функции $f(t)$ (оригиналы), а в правой колонке — соответствующие им операторные изображения $\bar{f}(p)$, где

$$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt \quad (p \text{ — комплексный параметр})$$

означает преобразование Лапласа — Карсона.

Во второй главе в левой колонке располагаются операторные изображения $\bar{f}(p)$, а в правой — соответствующие им функции $f(t)$, где

$$f(t)=\frac{1}{2\pi i}\int_{c-i\infty}^{c+i\infty} e^{pt}\,\frac{\bar{f}(p)}{p}\,dp.$$

В третьей и четвертой главах содержатся формулы операционного исчисления двух переменных. По аналогии с предыдущим в левой колонке третьей главы приводятся функции $f(x, y)$ (оригиналы), а в правой — соответствующие им операторные изображения $\bar{f}(p, q)$, где

$$\bar{f}(p, q)=pq\int_0^\infty\int_0^\infty e^{-px-qy}f(x, y)\,dx\,dy \qquad (p,\ q \text{ — комплексные параметры})$$

означает двумерное преобразование Лапласа — Карсона

В четвертой главе в левой колонке располагаются операторные изображения $\bar{f}(p, q)$, а в правой — соответствующие им функции $f(x, y)$, где

$$f(x, y) = -\frac{1}{4\pi^2} \int_{c_1 - i\infty}^{c_1 + i\infty} \int_{c_2 - i\infty}^{c_2 + i\infty} e^{px+qy} \frac{\bar{f}(p, q)}{pq} \, dp \, dq.$$

Содержание таблиц формул ясно из достаточно подробного оглавления. При классификации кусочно-непрерывных функций авторы сочли возможным не объединять их в самостоятельный раздел, поэтому они оказались включенными в разные разделы в соответствии с их заданием на отдельных интервалах.

При составлении таблиц были использованы в большинстве случаев существующие работы аналогичного характера. Среди них отметим следующие работы: [1—3], [6—8], [10], [12—14].

При обработке такого большого количества формул возможны недосмотры и ошибки. За все замечания и предложения по улучшению книги авторы заранее выражают глубокую благодарность читателям.

ПЕРЕЧЕНЬ ОБОЗНАЧЕНИЙ СПЕЦИАЛЬНЫХ ФУНКЦИЙ И НЕКОТОРЫХ ПОСТОЯННЫХ

№	Обозначение	Наименование
1	$\operatorname{Arch} x = \ln\left(x + \sqrt{x^2 - 1}\right)$	Обратная гиперболическая функция
2	$\operatorname{Arsh} x = \ln\left(x + \sqrt{x^2 + 1}\right)$	То же
3	$\operatorname{Arth} x = \frac{1}{2} \ln \frac{1+x}{1-x}$	»
4	$\operatorname{Arcth} x = \frac{1}{2} \ln \frac{x+1}{x-1}$	»
5	$(a)_\nu = \frac{\Gamma(a+\nu)}{\Gamma(a)}$	
6	$(a)_0 = 1$	
7	$(a)_n = a(a+1)\ldots(a+n-1)$ $n = 1, 2, 3, \ldots$	
8	$\binom{a}{b} = \frac{\Gamma(a+1)}{\Gamma(b+1)\,\Gamma(a-b+1)}$	Биномиальные коэффициенты
9	$\arccos x = \frac{1}{i} \ln\left(x + \sqrt{x^2 - 1}\right)$	Обратная тригонометрическая функция
10	$\arcsin x = \frac{1}{i} \ln\left(ix + \sqrt{1 - x^2}\right)$	То же
11	$\operatorname{arctg} x = \frac{i}{2} \ln \frac{1-ix}{1+ix}$	»
12	$\operatorname{arcctg} x = \frac{i}{2} \ln \frac{x-i}{x+i}$	»

№	Обозначение	Наименование
13	$B(k) = \int\limits_0^{\frac{\pi}{2}} \frac{\cos^2 \varphi \, d\varphi}{\sqrt{1-k^2 \sin^2 \varphi}}$	Полный эллиптический интеграл
14	B_n	Числа Бернулли n-го порядка
15	$\mathrm{bei}_\nu(x) = \mathrm{Im}\,[J_\nu(i\sqrt{i}\,x)]$	Функция Томсона
16	$\mathrm{ber}_\nu(x) = \mathrm{Re}\,[J_\nu(i\sqrt{i}\,x)]$	То же
17	$\mathrm{bei}_0(x) = \mathrm{bei}\,x$	»
18	$\mathrm{ber}_0(x) = \mathrm{ber}\,x$	»
19	$C = -\Gamma'(1) = -\psi(1) = 0{,}577215665\ldots$	Постоянная Эйлера
20	$C(k) = \int\limits_0^{\frac{\pi}{2}} \frac{\sin^2 \varphi \cos^2 \varphi \, d\varphi}{(1-k^2 \sin^2 \varphi)^{3/2}}$	Полный эллиптический интеграл
21	$C(x) = \frac{1}{\sqrt{2\pi}} \int\limits_0^x \frac{\cos u}{\sqrt{u}}\, du$	Косинус-интеграл Френеля
22	$C_n^\nu(x) = \frac{\Gamma(n+2\nu)}{\Gamma(n+1)\,\Gamma(2\nu)} \times {}_2F_1\left(n+2\nu,\ -n;\ \nu+\frac{1}{2};\ \frac{1-x}{2}\right)$	Полиномы Гегенбауэра
23	$C(x) - iS(x) = \int\limits_0^x \frac{e^{-iu}}{\sqrt{2\pi u}}\, du = \frac{1}{2} \int\limits_0^x H^{(2)}_{-\frac{1}{2}}(u)\, du$	Интеграл Френеля
24	$Ce_{2n}(z, q) = ce_{2n}(iz, q)$	Присоединенная (модифицированная) функция Матье первого рода

№	Обозначение	Наименование
25	$Ce_{2n+1}(z, q) = ce_{2n+1}(iz, q)$	Присоединенная (модифицированная) функция Матье первого рода
26	$\mathrm{Ci}(x) = -\int\limits_x^\infty \frac{\cos u}{u}\,du = \ln \gamma x - \int\limits_0^x \frac{1-\cos u}{u}\,du$	Интегральный косинус
27	$\mathrm{Ci}(x) = -\mathrm{ci}(x) = \frac{1}{2}[\mathrm{Ei}(ix) + \mathrm{Ei}(-ix)]$	То же
28	$ce_{2n}(z, q) = \sum\limits_{k=0}^{\infty} A_{2k}^{(2n)} \cos 2kz$	Периодическая функция Матье (функция Матье первого рода)
29	$ce_{2n+1}(z, q) = \sum\limits_{k=0}^{\infty} A_{2k+1}^{(2n+1)} \cos(2k+1) z$	То же
30	$\mathrm{ch}\, x = \frac{e^x + e^{-x}}{2}$	Гиперболический косинус
31	$\cos x = \frac{e^{ix} + e^{-ix}}{2}$	
32	$\mathrm{ctg}\, x = \frac{\cos x}{\sin x}$	
33	$\csc x = \frac{1}{\sin x}$	
34	$\mathrm{cth}\, x = \frac{\mathrm{ch}\, x}{\mathrm{sh}\, x}$	Гиперболический котангенс
35	$\mathrm{csch}\, x = \frac{1}{\mathrm{sh}\, x}$	Гиперболический косеканс

№	Сбозначение	Наименсвание
36	$\mathrm{chi}\,(x)=\ln\gamma x+\int\limits_0^x\frac{\mathrm{ch}\,u-1}{u}\,du$	Интегральный гиперболический косинус
37	$\boldsymbol{D}(k)=\int\limits_0^{\frac{\pi}{2}}\frac{\sin^2\varphi\,d\varphi}{\sqrt{1-k^2\sin^2\varphi}}$	Полный эллиптический интеграл
38	$D_\nu(x)=$ $=2^{\frac{1}{2}\nu+\frac{1}{4}}x^{-\frac{1}{2}}W_{\frac{1}{2}\nu+\frac{1}{4},\ \frac{1}{4}}\left(\frac{x^2}{2}\right)$	Функция параболического цилиндра (функция Вебера)
39	$D_n(x)=$ $=(-1)^n e^{\frac{x^2}{4}}\frac{d^n}{dx^n}\left(e^{-\frac{x^2}{2}}\right)=$ $=e^{-\frac{x^2}{4}}\mathrm{He}_n(x);\ n=0,\ 1,\ 2,\ \ldots$	То же
40	$\boldsymbol{E}(k)=\int\limits_0^{\frac{\pi}{2}}\sqrt{1-k^2\sin^2\varphi}\,d\varphi$	Полный эллиптический интеграл
41	$\boldsymbol{E}(k,\ \varphi)=\int\limits_0^{\varphi}\sqrt{1-k^2\sin^2 u}\,du$	Эллиптический интеграл второго рода
42	$E_\nu(x)=\frac{1}{\pi}\int\limits_0^{\pi}\sin(\nu\varphi-x\sin\varphi)\,d\varphi$	Функция Вебера
43	$\mathrm{Ei}\,(x)=\int\limits_{-\infty}^{x}\frac{e^u}{u}\,du=\mathrm{li}\,(e^x)$	Интегральная показательная функция

№	Обозначение	Наименование
44	$-\mathrm{Ei}(-z)=\int_z^\infty \frac{e^{-u}}{u}\,du=$ $=-C-\ln z-\sum_{n=1}^{\infty}\frac{(-z)^n}{n\cdot n!}=$ $=z^{-\frac{1}{2}}e^{-\frac{z}{2}}W_{-\frac{1}{2},\,0}(z),$ $-\pi<\arg z<\pi$	Интегральная показательная функция
45	$\mathrm{Ei}(-ix)=\mathrm{Ci}(x)-i\,\mathrm{si}(x)$	То же
46	$\overline{\mathrm{Ei}}(x)=\frac{1}{2}[\mathrm{Ei}(x+i0)+$ $+\mathrm{Ei}(x-i0)]=C+\ln x+$ $+\sum_{n=1}^{\infty}\frac{x^n}{n\cdot n!},\quad x>0$	Действительная часть $\mathrm{Ei}(x)$
47	$\overline{\mathrm{Ei}}(ix)=\mathrm{Ci}(x)+i\pi+i\,\mathrm{si}(x)$	
48	$\mathrm{erf}(x)=\frac{2}{\sqrt{\pi}}\int_0^x e^{-u^2}\,du=$ $=\frac{2x}{\sqrt{\pi}}\,{}_1F_1\left(\frac{1}{2},\frac{3}{2};-x^2\right)=$ $=\frac{2}{\sqrt{\pi}}x^{-\frac{1}{2}}e^{-\frac{x^2}{2}}M_{-\frac{1}{4},\,\frac{1}{4}}(x^2)$	Интеграл вероятности
49	$\mathrm{erfc}(x)=1-\mathrm{erf}(x)=$ $=\frac{2}{\sqrt{\pi}}\int_x^\infty e^{-u^2}\,du=$ $=(\pi x)^{-\frac{1}{2}}e^{-\frac{x^2}{2}}W_{-\frac{1}{4}\pm\frac{1}{4}}(x^2)$	

№	Обозначение	Наименование
50	$E(p;\ \alpha_r:q;\ \varrho_s:x)=$ $=\sum\limits_{r=1}^{p}\frac{\prod\limits_{s=1}^{p}{}'\,\Gamma(\ _s-\alpha_r)}{\prod\limits_{t=1}^{q}\Gamma(\varrho_t-\alpha_r)}\Gamma(\alpha_r)\,x^{\alpha_r}\times$ $\times{}_{q+1}F_{p-1}(\alpha_r,\ \alpha_r-\varrho_1+1,\ \ldots$ $\ldots,\alpha_r-\varrho_q+1;\ \alpha_r-\alpha_1+1,\ldots,*,\ldots$ $\ldots,\ \alpha_r-\alpha_p+1;\ (-1)^{p+q}x),$ где прим (′) над $\prod\limits_{s=1}^{p}{}'$ и звездочка (*) в ${}_{q+1}F_{p-1}$ означают, что член, содержащий $\alpha_r-\alpha_r$, исключается; $p\geqslant q+1$; при $p=q+1$, $\|x\|<1$ $E(p;\ \alpha_r:q;\ \varrho_s:x)=$ $=\frac{\prod\limits_{r=1}^{p}\Gamma(\alpha_r)}{\prod\limits_{s=1}^{q}\Gamma(\varrho_s)}\,{}_pF_q\left(\alpha_1,\ \ldots,\ \alpha_p;\right.$ $\left.\varrho_1,\ \ldots,\ \varrho_q;\ -\frac{1}{x}\right)$ $p\leqslant q+1$; $x\neq 0$; при $p=q+1$ $\|x\|>1.$	Функция Мак-Роберта
51	$F(k)=\int\limits_0^{\frac{\pi}{2}}\frac{d\varphi}{\sqrt{1-k^2\sin^2\varphi}}$	Полный эллиптический интеграл
52	$F(k,\ \varphi)=\int\limits_0^{\varphi}\frac{du}{\sqrt{1-k^2\sin^2 u}}$	Эллиптический интеграл первого рода
53	$F(\alpha,\ \beta;\ \gamma;\ x)={}_2F_1(\alpha,\ \beta;\ \gamma;\ x)=$ $=\frac{\Gamma(\gamma)}{\Gamma(\alpha)\Gamma(\beta)}\sum\limits_{k=1}^{\infty}\frac{\Gamma(\alpha+k)\Gamma(\beta+k)}{\Gamma(\gamma+k)}\frac{x^k}{k!}$ $\|x\|<1$	Гипергеометрическая функция Гаусса

№	Обозначение	Наименование
54	${}_pF_q(\alpha_1, \alpha_2, \ldots, \alpha_p; \beta_1, \beta_2, \ldots, \beta_q; x) = \sum_{k=0}^{\infty} \frac{(\alpha_1, k)(\alpha_2, k) \ldots (\alpha_p, k)}{(\beta_1, k)(\beta_2, k) \ldots (\beta_q, k)} \frac{x^k}{k!}$ $(\alpha, k) = \frac{\Gamma(\alpha+k)}{\Gamma(\alpha)}, (\beta, k) = \frac{\Gamma(\beta+k)}{\Gamma(\beta)}$	Обобщенный гипергеометрический ряд
55	${}_1F_1(\alpha; \beta; z) = \Phi(\alpha; \beta; z) = \frac{\Gamma(\beta)}{\Gamma(\alpha)} \sum_{k=0}^{\infty} \frac{\Gamma(\alpha+k)}{\Gamma(\beta+k)} \frac{z^k}{k!}$	Вырожденная гипергеометрическая функция
56	$\mathcal{F}_n(\alpha, \gamma, x) = F(-n, \alpha+n; \gamma; x) = 1 + \sum_{k=1}^{n} (-1)^k \times \binom{n}{k} \frac{(\alpha+n) \ldots (\alpha+n+k-1)}{\gamma(\gamma+1) \ldots (\gamma+k-1)} x^k$ $(\gamma \neq 0, -1, \ldots, -n+1)$	
57	$F_1(\alpha; \beta, \beta'; \gamma; x, y) = \sum_{m, n=0}^{\infty} \frac{(\alpha)_{m+n} (\beta)_m (\beta')_n}{(\gamma)_{m+n} m! n!} x^m y^n$	Гипергеометрическая функция двух переменных
58	$F_2(\alpha; \beta, \beta'; \gamma, \gamma'; x, y) = \sum_{m, n=0}^{\infty} \frac{(\alpha)_{m+n} (\beta)_m (\beta')_n}{(\gamma)_m (\gamma')_n m! n!} x^m y^n$	То же
59	$F_3(\alpha, \alpha'; \beta, \beta'; \gamma; x, y) = \sum_{m, n=0}^{\infty} \frac{(\alpha)_m (\alpha')_n (\beta)_m (\beta')_n}{(\gamma)_{m+n} m! n!} x^m y^n$	»
60	$F_4(\alpha, \beta; \gamma, \gamma'; x, y) = \sum_{m, n=0}^{\infty} \frac{(\alpha)_{m+n} (\beta)_{m+n}}{(\gamma)_m (\gamma')_n m! n!} x^m y^n$	»

№	Обозначение	Наименование
61	$F_A(\alpha;\ \beta_1, \ldots, \beta_n;\ \gamma_1, \ldots, \gamma_n;\ z_1, \ldots, z_n) = \sum_{m_1, \ldots, m_n=0}^{\infty} \frac{(\alpha)_{m_1+\ldots+m_n}(\beta_1)_{m_1}\ldots(\beta_n)_{m_n}}{(\gamma_1)_{m_1}\ldots(\gamma_n)_{m_n} m_1!\ldots m_n!} \times z_1^{m_1}\ldots z_n^{m_n}$	Гипергеометрическая функция нескольких переменных
62	$Fek_{2n}(z, q) = \frac{ce_{2n}(0, q)}{\pi A_0^{(2n)}} \times \sum_{k=0}^{\infty} (-1)^k A_{2k}^{(2n)} K_{2k}(-2i\sqrt{q}\,\mathrm{sh}\,z)$	Второе непериодическое решение уравнения Матье
63	$Fek_{2n+1}(z, q) = \frac{ce_{2n+1}(0, q)}{\pi\sqrt{q}\,A_1^{(2n+1)}}\,\mathrm{cth}\,z \times \sum_{k=0}^{\infty} (-1)^k (2k+1) \times A_{2k+1}^{(2n+1)} K_{2k+1}(-2i\sqrt{q}\,\mathrm{sh}\,z)$	То же
64	$Gek_{2n+1}(z, q) = \frac{se'_{2n+1}(0, q)}{\pi\sqrt{q}\,B_1^{(2n+1)}} \times \sum_{k=0}^{\infty} (-1)^k B_{2k+1}^{(2n+1)} \times K_{2k+1}(-2i\sqrt{q}\,\mathrm{sh}\,z)$	»
65	$Gek_{2n+2}(z, q) = \frac{se'_{2n+2}(0, q)}{\pi q B_2^{(2n+2)}}\,\mathrm{cth}\,z \times \sum_{k=0}^{\infty} (-1)^k (2k+2) B_{2k+2}^{(2n+2)} \times K_{2k+2}(-2i\sqrt{q}\,\mathrm{sh}\,z)$	»

№	Обозначение	Наименование
66	$G_{p,q}^{(m,n)}\left(x\,\middle\vert\,\begin{matrix}a_1,\ldots,a_p\\ b_1,\ldots,b_q\end{matrix}\right)=\frac{1}{2\pi i}\times$ $\times\int\limits_L \frac{\prod\limits_{j=1}^{m}\Gamma(b_j-s)\prod\limits_{j=1}^{n}\Gamma(1-a_j+s)}{\prod\limits_{j=m+1}^{q}\Gamma(1-b_j+s)\prod\limits_{j=n+1}^{p}\Gamma(a_j-s)}\,x^s ds,$ где L — путь, проходимый от $-i\infty$ до $+i\infty$ так, что полюсы функций $\Gamma(1-a_k+s)$ лежат слева, а полюсы функций $\Gamma(b_j-s)$ справа от L; $0\leqslant m\leqslant q$, $0\leqslant n\leqslant p$. Более подробные сведения см. в [5]	Функция Мейера
67	$\mathbf{H}_\nu(z)=\sum\limits_{n=0}^{\infty}\frac{(-1)^n\left(\frac{z}{2}\right)^{\nu+2n+1}}{\Gamma\left(n+\frac{3}{2}\right)\Gamma\left(n+\nu+\frac{3}{2}\right)}$	Функция Струве
68	$H_\nu^{(1)}(z)=J_\nu(z)+iY_\nu(z)$	Функция Ханкеля первого рода
69	$H_\nu^{(2)}(z)=J_\nu(z)-iY_\nu(z)$	Функция Ханкеля второго рода
70	$\mathrm{He}_n(x)=(-1)^n e^{\frac{x^2}{2}}\frac{d^n}{dx^n}\left(e^{-\frac{x^2}{2}}\right)$	Полиномы Эрмита
71	$\mathrm{He}_{2n}(x)=(-1)^n 2^{-n}(n!)^{-1}(2n)!\times$ $\times{}_1F_1\left(-n;\ \frac{1}{2};\ \frac{x^2}{2}\right)$	То же
72	$\mathrm{He}_{2n+1}(x)=$ $=(-1)^n 2^{-n}(n!)^{-1}(2n+1)!\times$ $\times x\,{}_1F_1\left(-n;\ \frac{3}{2};\ \frac{x^2}{2}\right)$	»
73	$\mathrm{He}_n^*(x)=(-1)^n e^{x^2}\frac{d^n}{dx^n}(e^{-x^2})$	»
74	$\mathrm{hei}_\nu(x)=\mathrm{Im}\left[\cdot\ {}_{\nu}^{(1)}(i\sqrt{i}\,x)\right]$	Функция Томсона
75	$\mathrm{hei}_0(x)=\mathrm{hei}\,(x)$	То же

№	Обозначение	Наименование
76	$\mathrm{her}_{\nu}(x)=\mathrm{Re}\left[\;{}^{(1)}_{\nu}(i\sqrt{i}\,x)\right]$	Функция Томсона
77	$\mathrm{her}_0(x)=\mathrm{her}(x)$	То же
78	$I_{\nu}(x)=i^{-\nu}J_{\nu}(ix)=\sum_{m=0}^{\infty}\frac{\left(\frac{x}{2}\right)^{\nu+2m}}{m!\,\Gamma(\nu+m+1)}$	Функция Бесселя мнимого аргумента
79	$\mathrm{Ii}_0(x)=\mathrm{Ji}_0(ix)$	Интегральная функция Бесселя
80	$\mathbf{J}_{\nu}(x)=\frac{1}{\pi}\int_0^{\pi}\cos(\nu\varphi-x\sin\varphi)\,d\varphi$	Функция Ангера
81	$J_{\nu}(x)=\sum_{k=0}^{\infty}\frac{(-1)^k\left(\frac{x}{2}\right)^{\nu+2k}}{k!\,\Gamma(\nu+k+1)}$	Функция Бесселя
82	$J^{(2)}_{\mu,\,\nu}(x)=\frac{x^{\mu+\nu}}{3^{\mu+\nu}\Gamma(\mu+1)\,\Gamma(\nu+1)}\times{}_0F_2\left(\mu+1,\ \nu+1;\ -\frac{x^3}{27}\right)$	Функция Бесселя высших порядков
83	$J^{(n)}_{\lambda_1,\,\lambda_2,\,\ldots,\,\lambda_n}(x)=\left(\frac{x}{n+1}\right)^{\lambda_1+\lambda_2+\ldots+\lambda_n}\times\frac{1}{\Gamma(\lambda_1+1)\Gamma(\lambda_2+1)\ldots\Gamma(\lambda_n+1)}\times{}_0F_n\left[\lambda_1+1,\ \lambda_2+1,\ \ldots,\ \lambda_n+1;\ -\left(\frac{x}{n+1}\right)^{n+1}\right]$	То же
84	$J^m_n(x)=\frac{1}{\pi}\int_0^{\pi}(2\cos\varphi)^m\cos(n\varphi-x\sin\varphi)\,d\varphi$	Функция Бурже (Bourget)
85	$J_{\nu}(xi\sqrt{i})=\mathrm{ber}_{\nu}(x)+i\,\mathrm{bei}_{\nu}(x)$	Функция Бесселя

№	Обозначение	Наименование
86	$Jc(x, y)=\int_0^y J_0(xu)\cos u\,du$	
87	$Js(x, y)=\int_0^y J_0(xu)\sin u\,du$	
88	$Ji_\nu(x)=\int_x^\infty \frac{J_\nu(u)}{u}\,du$	Интегральная функция Бесселя
89	$i^n\mathrm{erfc}(x)=\frac{2}{\sqrt{\pi}}\int_x^\infty \frac{(\xi-x)^n}{n!}e^{-\xi^2}d\xi=$ $=\int_x^\infty i^{n-1}\mathrm{erfc}(\xi)\,d\xi$	Интегральная функция ошибок
90	$\boldsymbol{K}(k)=\boldsymbol{F}(k)$	Полный эллиптический интеграл первого рода
91	$K_\nu(x)=\frac{\pi}{2}\left[\frac{I_{-\nu}(x)-I_\nu(x)}{\sin\nu\pi}\right]=$ $=\frac{\pi}{2}i^{\nu+1}H_\nu^{(1)}(ix)$	Функция Бесселя от мнимого аргумента (функция Макдональда)
92	$\mathrm{Ki}_\nu(x)=\int_x^\infty \frac{K_\nu(u)}{u}\,du$	Интегральная функция Бесселя
93	$k_{2\nu}(z)=\frac{1}{\Gamma(\nu+1)}W_{\nu,\frac{1}{2}}(2z)$	Функция Бейтмана
94	$\mathrm{kei}_\nu(x)=\mathrm{Im}\,[i^{-\nu}K_\nu(\sqrt{i}\,x)]$	Функция Томсона
95	$\mathrm{ker}_\nu(x)=\mathrm{Re}\,[i^{-\nu}K_\nu(\sqrt{i}\,x)]$	То же
96	$\mathrm{kei}_0(x)=\mathrm{kei}(x)$	»
97	$\mathrm{ker}_0(x)=\mathrm{ker}(x)$	»

№	Обозначение	Наименование
98	$\mathbf{L}_\nu(x)=i^{-\nu-1}\mathbf{H}_\nu(ix)$	Модифицированная функция Струве
99	$L_n(x)=\frac{e^x}{n!}\frac{d^n}{dx^n}(x^ne^{-x})$	Полиномы Лагерра
100	$L_n^{(\alpha)}(x)=\frac{e^xx^{-\alpha}}{n!}\frac{d^n}{dx^n}(e^{-x}x^{n+\alpha})$	То же
101	$L_n^{(0)}(x)=L_n(x)$	»
102	$L_\nu(x)=\frac{e^{\frac{x}{2}}}{\sqrt{x}}M_{\nu+\frac{1}{2},\,0}(x)=$ $={}_1F_1(-\nu;\ 1;\ x)$	Функция Лагерра
103	$L_\nu^{(\alpha)}(x)=\frac{\Gamma(\alpha+\nu+1)}{\Gamma(\alpha+1)\,\Gamma(\nu+1)}\times$ $\times x^{\frac{\alpha+1}{2}}e^{\frac{x}{2}}M_{\frac{\alpha+1}{2}+\nu,\,\frac{\alpha}{2}}(x)$	То же
104	$\mathrm{L}_2(z)=\sum_{n=1}^{\infty}\frac{z^n}{n^2}=$ $=-\int_0^z\frac{\ln(1-z)}{z}dz$	Дилогарифм Эйлера
105	$\mathrm{li}\,x=\int_0^x\frac{du}{\ln u}=\mathrm{Ei}\,(\ln x)$	Интегральный логарифм
106	$\ln z=i\varphi+\ln\lvert z\rvert,$ $z=re^{i(\varphi+2k\pi)},\ -\pi<\varphi<\pi$	Натуральный логарифм
107	$M_{\mu,\,\nu}(x)=x^{\nu+\frac{1}{2}}e^{-\frac{x}{2}}\times$ $\times{}_1F_1\left(\frac{1}{2}+\nu-\mu;\ 2\nu+1;\ x\right)$	Вырожденная гипергеометрическая функция Уиттекера
108	$N_\nu(x)=Y_\nu(x)$	Функция Неймана

№	Обозначение	Наименование
109	$N_{\mu,\nu}(x) = Y_{\mu,\nu}(x)$	
110	$Ni(x) = Yi(x)$	Интегральная функция Нейманта
111	$O_n(x) = \frac{1}{2}\int_0^\infty e^{-xu}\left[(u+\sqrt{u^2+1})^n + (u-\sqrt{u^2+1})^n\right]du = \frac{1}{4}\sum_{m=0}^{\left[\frac{n}{2}\right]} \frac{n(n-m-1)!}{m!\left(\frac{x}{2}\right)^{n-2m+1}},$ $n = 1, 2, 3, \ldots$	Полиномы Неймана
112	$O_{-n}(x) = (-1)^n O_n(x),$ $n = 1, 2, 3, \ldots$	То же
113	$O_0(x) = \frac{1}{x}$	
114	$P_n(x) = \frac{1}{2^n n!}\frac{d^n}{dx^n}(x^2-1)^n$	Полиномы Лежандра первого рода
115	$P_\nu^\mu(z) = \frac{1}{\Gamma(1-\mu)}\left(\frac{z+1}{z-1}\right)^{\frac{\mu}{2}} \times {}_2F_1\left(-\nu, \nu+1; 1-\mu; \frac{1}{2}-\frac{z}{2}\right);$ z — точка комплексной плоскости с разрезом вдоль вещественной оси от $-\infty$ до $+1$.	Присоединенная функция Лежандра первого рода
116	$P_\nu(z) = P_\nu^0(z) = {}_2F_1\left(-\nu, \nu+1; 1; \frac{1}{2}-\frac{z}{2}\right)$	Функция Лежандра первого рода
117	$\mathrm{P}_\nu^\mu(x) = \frac{1}{\Gamma(1-\mu)}\left(\frac{1+x}{1-x}\right)^{\frac{\mu}{2}} \times {}_2F_1\left(-\nu, \nu+1; 1-\mu; \frac{1}{2}-\frac{1}{2}x\right)$ $-1 < x < 1$	Присоединенная функция Лежандра первого рода

№	Обозначение	Наименование
118	$\mathrm{P}_\nu(x)=\mathrm{P}_\nu^0(x)$	Функция Лежандра первого рода
119	$P(x, \nu)=\int\limits_0^x e^{-u}u^{\nu-1}du=$ $=\Gamma(\nu)-\Gamma(\nu, x)=\gamma(\nu, x)$	Неполная гамма-функция
120	$P_n^{(\alpha, \beta)}(x)=\frac{\Gamma(1+\alpha+n)}{n!\,\Gamma(1+\alpha)}\times$ $\times{}_2F_1\left(-n, n+\alpha+\beta+1;\right.$ $\left.\alpha+1; \frac{1}{2}-\frac{1}{2}x\right)$	Полиномы Якоби
121	$p_n(x; \alpha)=n!\alpha^{-n}L_n^{(x-n)}(\alpha)$	Полиномы Шарлье
122	$Q_n(x)=\frac{1}{2^n n!}\left[(x^2-1)^n\ln\frac{x+1}{x-1}\right]-$ $-\ln\sqrt{\frac{x+1}{x-1}}P_n(x)$ $\lvert x\rvert>1$	Полиномы Лежандра второго рода
123	$Q_\nu^\mu(z)=2^{-\nu-1}\left[\Gamma\left(\frac{3}{2}+\nu\right)\right]^{-1}\times$ $\times e^{i\mu\pi}\pi^{\frac{1}{2}}\Gamma(\mu+\nu+1)z^{-\mu-\nu-1}\times$ $\times(z^2-1)^{\frac{\mu}{2}}{}_2F_1\left(\frac{\mu+\nu+1}{2},\right.$ $\left.\frac{\mu+\nu+2}{2}; \nu+\frac{3}{2}; \frac{1}{z^2}\right);$ z — точка комплексной плоскости с разрезом вдоль вещественной оси от $-\infty$ до $+1$.	Присоединенная функция Лежандра второго рода
124	$Q_\nu(z)=Q_\nu^0(z)$	Функция Лежандра второго рода

№	Обозначение	Наименование
125	$Q_\nu^\mu(x)=\frac{1}{2}e^{-i\mu\pi}\times$ $\times\left[e^{-\frac{i\mu\pi}{2}}Q_\nu^\mu(x+i0)+\right.$ $\left.+e^{\frac{i\mu\pi}{2}}Q_\nu^\mu(x-i0)\right]$ $-1<x<1$	Присоединенная функция Лежандра второго рода
126	$Q_\nu(x)=Q_\nu^0(x)$	Функция Лежандра второго рода
127	$Q(x, \nu)=\int\limits_x^\infty e^{-u}u^{\nu-1}du=\Gamma(\nu, x)$	Неполная гамма-функция
128	$Q^{\nu, \varrho}(x)=\sqrt{\pi}\,2^{2\nu-1}\times$ $\times\sum\limits_{k=0}^\infty\frac{\Gamma(\varrho+2\nu+2k)}{k!\,\Gamma(\varrho+\nu+k+1)}(2x)^{-\varrho-2\nu-2k}$	Ультрасферическая функция второго рода
129	$S(x)=\frac{1}{\sqrt{2\pi}}\int\limits_0^x\frac{\sin u}{\sqrt{u}}du$	Синус-интеграл Френеля
130	$S(\nu, x)=\int\limits_0^\infty\frac{e^{-xu}du}{(u+1)^\nu}=$ $=x^{\nu-1}e^x\int\limits_x^\infty e^{-\xi}\xi^{-\nu}d\xi=$ $=x^{\frac{\nu}{2}-1}e^{\frac{x}{2}}W_{-\frac{\nu}{2}, \frac{1-\nu}{2}}(x)$	Функция Шлемильха
131	$S_n(x)=\int\limits_0^\infty e^{-xu}\left[(u+\sqrt{u^2+1})^n-\right.$ $\left.-(u-\sqrt{u^2+1})^n\right]\frac{du}{\sqrt{u^2+1}}$	Полиномы Шлефли

№	Обозначение	Наименование
132	$\mathrm{Si}(x)=\int\limits_0^x \frac{\sin u}{u}\,du=\frac{\pi}{2}+\mathrm{si}(x)$	Интегральный синус
133	$S_{\mu,\nu}(x)=s_{\mu,\nu}(x)+$ $+2^{\mu-1}\Gamma\left(\frac{\mu-\nu+1}{2}\right)\Gamma\left(\frac{\mu+\nu+1}{2}\right)\times$ $\times\frac{1}{\sin\pi\nu}\left[\cos\left(\frac{\mu-\nu}{2}\pi\right)J_{-\nu}(x)-\right.$ $\left.-\cos\left(\frac{\mu+\nu}{2}\pi\right)J_{\nu}(x)\right]$	Функция Ломмеля
134	$Se_{2n}(z,q)=-ise_{2n}(iz,q)$	Функция Матье от мнимого аргумента
135	$Se_{2n+1}(z,q)=-ise_{2n+1}(iz,q)$	То же
136	$S_n(b_1,b_2,b_3,b_4;z)=$ $=\sum\limits_{h=1}^{n}\frac{\prod\limits_{j=1}^{n}{}'\Gamma(b_j-b_h)}{\prod\limits_{j=n+1}^{4}\Gamma(1+b_h-b_j)}z^{1+2b_h}\times$ $\times{}_0F_3(1+b_h-b_1,\ldots,*,\ldots$ $\ldots,1+b_h-b_4;(-1)^n z^2);$ знаки (′) и (*) означают, что член, содержащий b_h-b_h исключается.	
137	$s_1(x)=\frac{1}{3}(e^{-x}+e^{-\varepsilon x}+e^{-\varepsilon^2 x})$ $s_2(x)=\frac{1}{3}(e^{-x}+\varepsilon e^{-\varepsilon x}+\varepsilon^2 e^{-\varepsilon^2 x})$ $s_3(x)=\frac{1}{3}(e^{-x}+\varepsilon^2 e^{-\varepsilon x}+\varepsilon e^{-\varepsilon^2 x})$ $\varepsilon\neq 1,\ \varepsilon^3=1$	Синус третьего порядка
138	$se_{2n+1}(z,q)=\sum\limits_{k=0}^{\infty}B_{2k+1}^{(2n+1)}\sin(2k+1)z$	Периодическая функция Матье
139	$se_{2n}(z,q)=\sum\limits_{k=1}^{\infty}B_{2k}^{(2n)}\sin(2kz)$	То же

№	Обозначение	Наименование
140	$\operatorname{sh}(x)=\frac{e^{x}-e^{-x}}{2}$	Гиперболический синус
141	$\operatorname{shi}(x)=\int\limits_{0}^{x}\frac{\operatorname{sh}u}{u}du$	Интегральный гиперболический синус
142	$\operatorname{si}(x)=-\int\limits_{x}^{\infty}\frac{\sin u}{u}du$	Интегральный синус
143	$\sin x=\frac{e^{ix}-e^{-ix}}{2i}$	
144	$\sec x=1/\cos x$	
145	$\operatorname{sch} x=1/\operatorname{ch} x$	Гиперболический секанс
146	$s_{\mu,\nu}(z)=\frac{z^{\mu+1}}{(\mu-\nu+1)(\mu+\nu+1)}\times {}_1F_2\left(1;\frac{\mu-\nu+3}{2},\frac{\mu+\nu+3}{2};-\frac{z^2}{4}\right),\ \mu\pm\nu\neq-1,-2,-3,\ldots$	Функция Ломмеля
147	$\operatorname{sign} x=\begin{cases}-1 & \text{при } x<0\\ 0 & \text{при } x=0\\ 1 & \text{при } x>0\end{cases}$	
148	$\operatorname{stei}_\nu(x)=\operatorname{Im}[\mathbf{H}_\nu(i\sqrt{i}x)]$	
149	$\operatorname{ster}_\nu(x)=\operatorname{Re}[\mathbf{H}_\nu(i\sqrt{i}x)]$	
150	$T_n(x)=\cos(n\arccos x)=\frac{1}{2}[(x+\sqrt{x^2-1})^n+(x-\sqrt{x^2-1})^n]$	Полиномы Чебышева
151	$T_\alpha^{(n)}(x)=(-1)^n\frac{L_n^{(\alpha)}(x)}{\Gamma(\alpha+n+1)}$	Полиномы Сонина
152	$\operatorname{th} x=\operatorname{sh} x/\operatorname{ch} x$	Гиперболический тангенс

№	Обозначение	Наименование
153	$U_n(x)=\frac{\sin[(n+1)\arccos x]}{\sqrt{1-x^2}}$	Полиномы Чебышева
154	$U(\alpha, x)= =\frac{1}{\sqrt{\pi x}}\left[1+2\sum_{k=1}^{\infty} e^{-2k\alpha-\frac{k^2}{tx}}\right]$	
155	$U_\nu(w, z)= =\sum_{n=0}^{\infty}(-1)^n\left(\frac{w}{z}\right)^{\nu+2n} J_{\nu+2n}(z)$	Функция Ломмеля двух переменных
156	$V_\nu(w, z)=\cos\left(\frac{w}{2}+\frac{z^2}{2w}+\frac{\pi\nu}{2}\right)+ +U_{2-\nu}(w, z)$	То же
157	$W_{\mu,\nu}(z)=\frac{\Gamma(-2\nu)}{\Gamma\left(\frac{1}{2}-\mu-\nu\right)}M_{\mu,\nu}(z)+ +\frac{\Gamma(2\nu)}{\Gamma\left(\frac{1}{2}-\mu+\nu\right)}M_{\mu,-\nu}(z)$	Вырожденная гипергеометрическая функция Уиттекера
158	$[x]=n$ при $n\leqslant x<n+1$	Целая часть x
159	$Y_\nu(z)=\frac{\cos(\pi\nu)J_\nu(z)-J_{-\nu}(z)}{\sin(\pi\nu)}$	Функция Бесселя второго рода (функция Неймана)
160	$Yi_\nu(x)=\int_x^\infty \frac{Y_\nu(u)}{u}\,du$	Интегральная функция Бесселя
161	$Y_{\mu,\nu}(x)=\frac{x^{\nu-\frac{1}{2}}}{\Gamma(2\nu+1)}M_{\mu,\nu}(x)$	Вырожденная гипергеометрическая функция Уиттекера
162	$B(x, y)=\frac{\Gamma(x)\Gamma(y)}{\Gamma(x+y)}$	Бета-функция

№	Обозначение	Наименование
163	$B_x(p, q) = \int\limits_0^x t^{p-1}(1-t)^{q-1}\,dt = \frac{x^p}{p}\,{}_2F_1(p, 1-q; p+1; x)$	Неполная бета-функция
164	$\Gamma(z) = \int\limits_0^\infty e^{-t} t^{z-1}\,dt = \Pi(z-1), \ \mathrm{Re}\, z > 0$	Гамма-функция
165	$\Gamma(\nu, x) = \int\limits_x^\infty e^{-u} u^{\nu-1}\,du = \Gamma(\nu) - \gamma(\nu, x) = x^{\frac{\nu-1}{2}} e^{-\frac{x}{2}} W_{\frac{\nu-1}{2}, \frac{\nu}{2}}(x)$	Неполная гамма-функция
166	$\gamma = e^C = 1{,}781072\ldots$	
167	$\gamma(\nu, x) = \int\limits_0^x e^{-u} u^{\nu-1}\,du = \frac{x^\nu}{\nu}\,{}_1F_1(\nu; \nu+1; -x) = \Gamma(\nu) - \Gamma(\nu, x) = P(x, \nu)$	Неполная гамма-функция
168	$\gamma_n(w, x) = i^{-n} U_n(iw, ix)$	Функция Ломмеля двух переменных мнимого аргумента
169	$\varepsilon_0 = 1, \ \varepsilon_n = 2 \ (n = 1, 2, \ldots)$	Числа Неймана
170	$\zeta(s) = \sum\limits_{n=1}^\infty n^{-s}, \ \mathrm{Re}\, s > 1$	Дзета-функция Римана
171	$\zeta(s, \nu) = \sum\limits_{n=0}^\infty \frac{1}{(n+\nu)^s}, \ \mathrm{Re}\, s > 1$	Обобщенная дзета-функция Римана

№	Обозначение	Наименование
172	$\vartheta_0(v, x) = 1 + 2\sum_{k=1}^{\infty}(-1)^k e^{-\pi^2 k^2 x} \times \cos 2\pi k v$	Тэта-функция
173	$\vartheta_1(v, x) = 2\sum_{k=0}^{\infty}(-1)^k e^{-\pi^2\left(k+\frac{1}{2}\right)^2 x} \times \sin \pi(2k+1)v$	То же
174	$\vartheta_2(v, x) = 2\sum_{k=0}^{\infty} e^{-\pi^2\left(k+\frac{1}{2}\right)^2 x} \times \cos \pi(2k+1)v$	»
175	$\vartheta_3(v, x) = 1 + 2\sum_{k=1}^{\infty} e^{-\pi^2 k^2 x}\cos(2\pi k v)$	»
176	$\hat{\vartheta}_0(v, x) = \frac{1}{\sqrt{\pi x}}\left[\sum_{k=0}^{\infty} e^{-\frac{1}{x}\left(v+k+\frac{1}{2}\right)^2} - \sum_{k=-1}^{-\infty} e^{-\frac{1}{x}\left(v+k+\frac{1}{2}\right)^2}\right]$	Модифицированная тэта-функция
177	$\hat{\vartheta}_1(v, x) = \frac{1}{\sqrt{\pi x}}\left[\sum_{k=0}^{\infty}(-1)^k e^{-\frac{1}{x}\left(v+k-\frac{1}{2}\right)^2} - \sum_{k=-1}^{-\infty}(-1)^k e^{-\frac{1}{x}\left(v+k-\frac{1}{2}\right)^2}\right]$	То же

№	Обозначение	Наименование
178	$\hat{\vartheta}_2(v, x) = \frac{1}{\sqrt{\pi x}}\left[\sum_{k=0}^{\infty}(-1)^k e^{-\frac{1}{x}(v+k)^2} - \sum_{k=-1}^{-\infty}(-1)^k e^{-\frac{1}{x}(v+k)^2}\right]$.	Модифицированная тэта-функция
179	$\hat{\vartheta}_3(v, x) = \frac{1}{\sqrt{\pi x}}\left[\sum_{k=0}^{\infty} e^{-\frac{1}{x}(v+k)^2} - \sum_{k=-1}^{-\infty} e^{-\frac{1}{x}(v+k)^2}\right]$	То же
180	$\Theta_n(w, x) = i^{-n} V_n(iw, ix)$	Функция Ломмеля двух переменных мнимого аргумента
181	$\Lambda(n) = \begin{cases} \ln q & \text{при } n = q^m, \text{ где } q \text{ — простое число, } m > 0 \\ 0 & \text{в остальных случаях} \end{cases}$	
182	$\lambda(e^x, \alpha) = \int_0^{\alpha} e^{-xu}\Gamma(u+1)\,du$	
183	$\mu(x, \alpha) = \int_0^{\infty} \frac{x^s s^{\alpha}}{\Gamma(s+1)}\,ds$	
184	$\mu(x, \alpha, \beta) = \int_0^{\infty} \frac{x^{s+\beta} s^{\alpha}}{\Gamma(s+\beta+1)}\,ds$	
185	$\nu(x) = \int_0^{\infty} \frac{x^s}{\Gamma(s+1)}\,ds$	

№	Обозначение	Наименование
186	$\nu(x, \alpha) = \int\limits_0^\infty \frac{x^{s+\alpha}}{\Gamma(s+\alpha+1)} ds = \int\limits_\alpha^\infty \frac{x^s}{\Gamma(s+1)} ds$	
187	$\nu i(x, \alpha) = \int\limits_0^x \frac{\nu(u, \alpha)}{u} du$	
188	$\Xi_1(\alpha, \alpha', \beta, \gamma; x, y) = \sum\limits_{m, n=0}^\infty \frac{(\alpha)_m (\alpha')_n (\beta)_m}{(\gamma)_{m+n} m! n!} x^m y^n$	Вырожденные гипергеометрические ряды двух переменных
189	$\Xi_2(\alpha, \beta, \gamma; x, y) = \sum\limits_{m, n=0}^\infty \frac{(\alpha)_m (\beta)_m}{(\gamma)_{m+n} m! n!} x^m y^n$	То же
190	$\xi(t) = -\frac{1}{2}\left(\frac{1}{4}+t^2\right)\pi^{-\frac{1}{2}\left(\frac{1}{2}+it\right)} \times \Gamma\left(\frac{1}{4}+\frac{it}{2}\right)\zeta\left(\frac{1}{2}+it\right)$	
191	$\Pi(z) = \Gamma(z+1)$	
192	$\Phi(z, s, v) = \sum\limits_{n=0}^\infty \frac{z^n}{(v+n)^s}$	
193	$\Phi_m(x) = {}_1F_1(-m; 1; x)$	
194	$\Phi_1(\alpha, \beta, \gamma; x, y) = \sum\limits_{m, n=0}^\infty \frac{(\alpha)_{m+n} (\beta)_m}{(\gamma)_{m+n} m! n!} x^m y^n$	Вырожденные гипергеометрические ряды двух переменных

№	Обозначение	Наименование
195	$\Phi_2(\beta, \beta', \gamma; x, y) = \sum_{m, n=0}^{\infty} \frac{(\beta)_m (\beta')_n}{(\gamma)_{m+n} m!\, n!} x^m y^n$	Вырожденные гипергеометрические ряды двух переменных
196	$\Phi_3(\beta, \gamma; x, y) = \sum_{m, n=0}^{\infty} \frac{(\beta)_m}{(\gamma)_{m+n} m!\, n!} x^m y^n$	То же
197	$\Phi_2(\beta_1, \ldots, \beta_n; \gamma; z_1, \ldots, z_n) = \sum_{m_1, \ldots, m_n=0}^{\infty} \frac{(\beta_1)_{m_1} \ldots (\beta_n)_{m_n}}{(\gamma)_{m_1+\ldots+m_n} m_1! \ldots m_n!} \times z_1^{m_1} \ldots z_n^{m_n}$	Вырожденные гипергеометрические ряды n переменных
198	$\chi(x, y) = \frac{1}{\sqrt{\pi y}} \exp\left(-\frac{x^2}{4y}\right)$	Функция источника уравнения теплопроводности
199	$\Psi(x) = \sum_{n \leqslant x} \Lambda(n), \quad x \geqslant 0$	
200	$\Psi_1(\alpha, \beta, \gamma, \gamma'; x, y) = \sum_{m, n=0}^{\infty} \frac{(\alpha)_{m+n} (\beta)_m}{(\gamma)_m (\gamma')_n m!\, n!} x^m y^n$	Вырожденные гипергеометрические ряды двух переменных
201	$\Psi_2(\alpha, \gamma, \gamma'; x, y) = \sum_{m, n=0}^{\infty} \frac{(\alpha)_{m+n}}{(\gamma)_m (\gamma')_n m!\, n!} x^m y^n$	То же
202	$\Psi_2(\alpha; \gamma_1, \ldots, \gamma_n; z_1, \ldots, z_n) = \sum_{m_1, \ldots, m_n=0}^{\infty} \frac{(\alpha)_{m_1+\ldots+m_n}}{(\gamma_1)_{m_1} \ldots (\gamma_n)_{m_n}} \times \frac{z_1^{m_1} \ldots z_n^{m_n}}{m_1! \ldots m_n!}$	Вырожденные гипергеометрические ряды n переменных

№	Обозначение	Наименование
203	$\psi(z)=\frac{\Gamma'(z)}{\Gamma(z)}$	Логарифмическая производная гамма-функции
204	$\psi(x, y)=\frac{x}{2y\sqrt{\pi y}}\exp\left(-\frac{x^2}{4y}\right)$	
205	$\omega(x)=\ln\Gamma(x)-\left(x-\frac{1}{2}\right)\ln x+$ $+x-\ln\sqrt{2\pi}$	Функция Бине (Binet)

Глава I

ПРЕОБРАЗОВАНИЕ ЛАПЛАСА—КАРСОНА

§ 1. Основные функциональные соотношения

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt} f(t)\,dt$
1.1	$\frac{1}{2\pi i}\int_{\sigma-i\infty}^{\sigma+i\infty} e^{pt}\frac{\bar{f}(p)}{p}\,dp$	$\bar{f}(p)$
1.2	$f(t+a)=f(t),\quad a>0$ (периодическая функция)	$\frac{p}{1-e^{-ap}}\int_0^a e^{-pt} f(t)\,dt$
1.3	$f(t+a),\quad a\geqslant 0$	$e^{ap}\left[\bar{f}(p)-p\int_0^a e^{-pt} f(t)\,dt\right]$
1.4	0 при $t<\frac{b}{a}$ $(at-b)$ при $t>\frac{b}{a}$ $a, b>0$	$\exp\left(-\frac{b}{a}p\right)\bar{f}\left(\frac{p}{a}\right)$
1.5	$e^{-\alpha t} f(t)$	$\frac{p}{p+\alpha}\bar{f}(p+\alpha)$
1.6	$t^n f(t)$	$(-1)^n\, p\,\frac{d^n}{dp^n}\left[\frac{\bar{f}(p)}{p}\right]$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
1.7	$t^{-n}f(t)$	$p\int\limits_p^\infty \ldots \int\limits_p^\infty \frac{\bar{f}(p)}{p}(dp)^n$
1.8	$f^{(n)}(t)$	$p^n\left[\bar{f}(p)-\sum\limits_{k=0}^{n-1}\frac{f^{(k)}(0)}{p^k}\right]$
1.9	$\int\limits_0^t f(\tau)\,d\tau$	$\frac{\bar{f}(p)}{p}$
1.10	$\int\limits_0^t (t-\tau)^{n-1}f(\tau)\,d\tau$	$\frac{(n-1)!}{p^n}\bar{f}(p)$
1.11	$\left(t\frac{d}{dt}\right)^n f(t)$, где $\left(t\frac{d}{dt}\right)^2 f(t)=t\frac{d}{dt}\left\{t\frac{d}{dt}[f(t)]\right\}$	$(-1)^n p\left(\frac{d}{dp}p\right)^n\frac{\bar{f}(p)}{p}$, $\left(\frac{d}{dp}p\right)^2\frac{\bar{f}(p)}{p}=\frac{d}{dp}\left\{p\frac{d}{dp}[\bar{f}(p)]\right\}$
1.12	$\left(\frac{d}{dt}t\right)^n f(t)$	$(-1)^n p\left(p\frac{d}{dp}\right)^n\frac{\bar{f}(p)}{p}$
1.13	$\left(\frac{1}{t}\frac{d}{dt}\right)^n f(t)$, если $\left[\left(\frac{1}{t}\frac{d}{dt}\right)^s f(t)\right]_{t=0}=0$ при $s=0, 1, \ldots, n-1$	$p\int\limits_p^\infty p\int\limits_p^\infty \ldots p\int\limits_p^\infty \bar{f}(p)(dp)^n$
1.14	$t^m f^{(n)}(t)$, $m \geqslant n$	$(-1)^m p\left(\frac{d}{dp}\right)^m[p^{n-1}\bar{f}(p)]$
1.15	$t^m f^{(n)}(t)$, $m < n$	$p\left(-\frac{d}{dp}\right)^m[p^{n-1}\bar{f}(p)]+$ $+(-1)^{m-1}p\left\{\frac{(n-1)!}{(n-m-1)!}\times\right.$ $\times p^{n-m-1}f(0)+\frac{(n-2)!}{(n-m-2)!}\times$ $\times p^{n-m-2}f'(0)+\ldots+$ $\left.+m!\,f^{(n-m-1)}(0)\right\}$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt} f(t)\,dt$
1.16	$\frac{d^n}{dt^n}[t^m f(t)],\quad m\geqslant n$	$(-1)^m p^{n+1}\frac{d^m}{dp^m}\left[\frac{\bar{f}(p)}{p}\right]$
1.17	$\frac{d^n}{dt^n}[t^m f(t)],\ m<n$	$(-1)^m p^{n+1}\frac{d^m}{dp^m}\left[\frac{\bar{f}(p)}{p}\right]-$ $-m!\,p^{n-m}f(0)-\frac{(m+1)!}{1!}\times$ $\times p^{n-m-1}f'(0)-\ldots-$ $-\frac{(n-1)!}{(n-m-1)!}\,p\,f^{(n-m-1)}(0)$
1.18	$\left(e^t\frac{d}{dt}\right)^n f(t)$, если $f^{(k)}(0)=0$ при $k=0, 1, \ldots, n-1$	$p(p-1)\ldots[p-(n-1)]\bar{f}(p-n)$
1.19	$e^{\beta t}f(\alpha t)$	$\frac{p}{p-\beta}\bar{f}\left(\frac{p-\beta}{\alpha}\right)$
1.20	$\int_0^t\frac{f(\tau)}{\tau}\,d\tau$	$\int_p^\infty\frac{\bar{f}(p)}{p}\,dp$
1.21	$\int_t^\infty\frac{f(\tau)}{\tau}\,d\tau$	$\int_0^p\frac{\bar{f}(p)}{p}\,dp$
1.22	$\int_0^t f_1(\tau)f_2(t-\tau)\,d\tau$	$\frac{1}{p}\bar{f}_1(p)\,\bar{f}_2(p)$
1.23	$f_1(t)f_2(t)$	$\frac{p}{2\pi i}\int_{\sigma-i\infty}^{\sigma+i\infty}\frac{\bar{f}_1(q)}{q}\frac{\bar{f}_2(p-q)}{p-q}\,dq$
1.24	$f(t^2)$	$\frac{p}{\sqrt{\pi}}\int_0^\infty e^{-\frac{p^2\xi^2}{4}}\bar{f}\left(\frac{1}{\xi^2}\right)d\xi$

2 Зак. 1125

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt} f(t)\,dt$
1.25	$t^n f(t^2)$	$\frac{2^{-\frac{n}{2}}}{\sqrt{\pi}}\, p\int\limits_0^\infty u^n e^{-\frac{p^2u^2}{4}}\,\mathrm{He}\left(\frac{pu}{\sqrt{2}}\right)\times$ $\times\,\bar{f}\left(\frac{1}{u^2}\right)du$
1.26	$t^\nu f(t^2)$	$\frac{2p}{\sqrt{2\pi}}\int\limits_0^\infty u^\nu e^{-\frac{p^2u^2}{4}} D_\nu(pu)\,\bar{f}\left(\frac{1}{2u^2}\right)du$
1.27	$t^{\nu-1} f\left(\frac{1}{t}\right),\quad \mathrm{Re}\,\nu>-1$	$p^{1-\frac{\nu}{2}}\int\limits_0^\infty u^{\frac{\nu}{2}-1} J_\nu(2\sqrt{up})\,\bar{f}(u)\,du$
1.28	$f(ae^t-a),\quad a>0$	$\frac{p}{\Gamma(p+1)}\int\limits_0^\infty e^{-u}u^p\bar{f}\left(\frac{u}{a}\right)\frac{du}{u}$
1.29	$f(a\,\mathrm{sh}\,t),\quad a>0$	$p\int\limits_0^\infty J_p(au)\,\bar{f}(u)\frac{du}{u}$
1.30	$\int\limits_0^\infty \frac{t^{u-1}}{\Gamma(u)} f(u)\,du$	$\frac{p\bar{f}(\ln p)}{\ln p}$
1.31	$\int\limits_0^\infty \frac{\sin(2\sqrt{ut})}{\sqrt{u}} f(u)\,du$	$\sqrt{\pi p}\,\bar{f}\left(\frac{1}{p}\right)$
1.32	$\frac{1}{\sqrt{t}}\int\limits_0^\infty \cos(2\sqrt{ut})\,f(u)\,du$	$\sqrt{\pi}\,p^{\frac{3}{2}}\,\bar{f}\left(\frac{1}{p}\right)$
1.33	$t^\nu\int\limits_0^\infty J_{2\nu}(2\sqrt{ut})\,f(u)\frac{du}{u^\nu}$	$p^{1-2\nu}\bar{f}\left(\frac{1}{p}\right)$
1.34	$\frac{1}{\sqrt{t}}\int\limits_0^\infty e^{-\frac{u^2}{4t}} f(u)\,du$	$\sqrt{\pi}\,\bar{f}(\sqrt{p})$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
1.35	$t^{-\frac{n}{2}-\frac{1}{2}}\int\limits_0^\infty e^{-\frac{u^2}{4t}}\,\mathrm{He}_n\left(\frac{u}{\sqrt{2t}}\right)f(u)\,du$	$2^{\frac{n}{2}}\sqrt{\pi}\,p^{\frac{n}{2}}\bar{f}(\sqrt{p})$
1.36	$\int\limits_0^t J_0(2\sqrt{u(t-u)})\,f(u)\,du$	$\frac{1}{p+\frac{1}{p}}\bar{f}\left(p+\frac{1}{p}\right)$
1.37	$t^{-\nu}\int\limits_0^\infty e^{-\frac{u^2}{8t}}D_{2\nu-1}\left(\frac{u}{\sqrt{2t}}\right)f(u)\,du$	$\sqrt{\pi}(2p)^{\nu-\frac{1}{2}}\bar{f}(\sqrt{p})$
1.38	$\int\limits_0^t\left(\frac{t-u}{au}\right)^{\nu}\times$ $\times J_{2\nu}(2\sqrt{aut-au^2})\,f(u)\,du$	$\frac{\bar{f}\left(p+\frac{a}{p}\right)}{p^{2\nu}\left(p+\frac{a}{p}\right)}$
1.39	$\int\limits_0^t\left(\frac{t-u}{t+u}\right)^{\nu}\times$ $\times J_{2\nu}(\sqrt{t^2-u^2})\,f(u)\,du$	$\frac{p}{p^2+1}(\sqrt{p^2+1}+p)^{-2\nu}\bar{f}(\sqrt{p^2+1})$
1.40	$\int\limits_0^t J_0(\sqrt{t^2-u^2})\,f(u)\,du$	$\frac{p}{p^2+1}\bar{f}(\sqrt{p^2+1})$
1.41	$f(t)-\int\limits_0^t J_1(u)\,f(\sqrt{t^2-u^2})\,du$	$\frac{p}{\sqrt{p^2+1}}\bar{f}(\sqrt{p^2+1})$
1.42	$\mathrm{ch}\,(\alpha t)\,f(t)$	$\frac{p}{2}\left[\frac{\bar{f}(p-\alpha)}{p-\alpha}+\frac{\bar{f}(p+\alpha)}{p+\alpha}\right]$
1.43	$\mathrm{sh}\,(\alpha t)\,f(t)$	$\frac{p}{2}\left[\frac{\bar{f}(p-\alpha)}{p-\alpha}-\frac{\bar{f}(p+\alpha)}{p+\alpha}\right]$
1.44	$\cos(\alpha t)\,f(t)$	$\frac{p}{2}\left[\frac{\bar{f}(p-i\alpha)}{p-i\alpha}+\frac{\bar{f}(p+i\alpha)}{p+i\alpha}\right]$
1.45	$\sin(\alpha t)\,f(t)$	$\frac{p}{2i}\left[\frac{\bar{f}(p-i\alpha)}{p-i\alpha}-\frac{\bar{f}(p+i\alpha)}{p+i\alpha}\right]$

№	$f(t)$	$\bar f(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
1.46	$\int\limits_0^\infty \frac{\operatorname{sh}(2\sqrt{tu})}{\sqrt{u}}f(u)\,du$	$-\sqrt{\pi p}\,\bar f\left(-\frac{1}{p}\right)$
1.47	$\int\limits_0^\infty \frac{\operatorname{ch}(2\sqrt{tu})}{\sqrt{u}}f(u)\,du$	$-\sqrt{\pi}\,p^{\frac{3}{2}}\,\bar f\left(-\frac{1}{p}\right)$
1.48	$t\int\limits_0^\infty J^{(2)}_{1,\,\frac{1}{2}}\left(3\sqrt[3]{\frac{t^2u}{4}}\right)f(u)\frac{du}{u}$	$\frac{2}{\sqrt{\pi}}\,\bar f\left(\frac{1}{p^2}\right)$
1.49	$\int\limits_0^\infty \left[1-2\sqrt{\pi}\,J^{(2)}_{1,\,\frac{1}{2}}\left(3\sqrt[3]{\frac{t^2u}{4}}\right)\right]\times$ $\times f(u)\,du$	$p^2\,\bar f\left(\frac{1}{p^2}\right)$
1.50	$\int\limits_0^\infty {}_0F_n\left(\frac{1}{n},\ \frac{2}{n},\ \ldots,\ \frac{n-1}{n},\ 1;\right.$ $\left.-\frac{ut^n}{n^n}\right)f(u)\,du$	$p^n\,\bar f\left(\frac{1}{p^n}\right)$
1.51	$t^{-\frac{3}{2}}\int\limits_0^\infty ue^{-\frac{u^2}{4t}}f(u)\,du$	$2\sqrt{\pi p}\,\bar f(\sqrt{p})$
1.52	$\frac{1}{\sqrt{t}}\int\limits_0^\infty e^{-\frac{u^2}{4t}}u^{\frac{\nu}{2}}\,du\times$ $\times\int\limits_0^\infty J_\nu(2\sqrt{u\xi})\,f(\xi)\,\xi^{-\frac{\nu}{2}}\,d\xi$	$\sqrt{\pi}\,p^{\frac{1-\nu}{2}}\,\bar f\left(\frac{1}{\sqrt{p}}\right)$
1.53	$t^{-\frac{n}{2}-1}\int\limits_0^\infty e^{-\frac{u^2}{4t}}\operatorname{He}_n\left(\frac{u}{2\sqrt{t}}\right)du\times$ $\times\int\limits_0^\infty f(\xi)\,J_\nu(2\sqrt{u\xi})\left(\frac{u}{\xi}\right)^{\frac{\nu}{2}}d\xi$	$\sqrt{\pi}\,p^{\frac{n-\nu-1}{2}}\,\bar f\left(\frac{1}{\sqrt{p}}\right)$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
1.54	$\int\limits_0^\infty \psi(\tau,t)f(\tau)\,d\tau - \int\limits_0^\infty d\xi\int\limits_0^\xi \psi(\xi,t)J_1(\tau)f(\sqrt{\xi^2-\tau^2})\,d\tau$	$\frac{p}{\sqrt{p+1}}\bar{f}(\sqrt{p+1})$
1.55	$\int\limits_0^\infty \psi(\tau,t)f(\tau)\,d\tau + \int\limits_0^\infty du\int\limits_0^u \psi(u,t)I_1(\tau)f(\sqrt{u^2-\tau^2})\,d\tau$	$\frac{p}{\sqrt{p-1}}\bar{f}(\sqrt{p-1})$
1.56	$(2t)^{-\frac{n}{2}}\int\limits_0^\infty \chi(u,t)\,\mathrm{He}_n\left(\frac{u}{\sqrt{2t}}\right)\times\left[f(u)-\int\limits_0^u f(\sqrt{u^2-\xi^2})J_1(\xi)\,d\xi\right]du$	$\frac{p^{\frac{n+1}{2}}}{\sqrt{p+1}}\bar{f}(\sqrt{p+1})$
1.57	$(2t)^{-\frac{n}{2}}\int\limits_0^\infty \chi(\tau,t)\,\mathrm{He}_n\left(\frac{\tau}{\sqrt{2t}}\right)\times\left[f(\tau)+\int\limits_0^\tau f(\sqrt{\tau^2-u^2})I_1(u)\,du\right]d\tau$	$\frac{p^{\frac{n+1}{2}}}{\sqrt{p-1}}\bar{f}(\sqrt{p-1})$
1.58	$\int\limits_0^t I_0(\alpha\sqrt{t^2-u^2})f(u)\,du$	$\frac{p}{p^2-\alpha^2}\bar{f}(\sqrt{p^2-\alpha^2})$
1.59	$f(t)-\alpha t\int\limits_0^t \frac{J_1(\alpha\sqrt{t^2-\tau^2})}{\sqrt{t^2-\tau^2}}f(\tau)\,d\tau$	$\frac{p^2}{p^2+\alpha^2}\bar{f}(\sqrt{p^2+\alpha^2})$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
1.60	$f(t)+\alpha t\int\limits_0^t \frac{I_1(\alpha\sqrt{t^2-\tau^2})}{\sqrt{t^2-\tau^2}}f(\tau)\,d\tau$	$\frac{p^2}{p^2-\alpha^2}\bar{f}(\sqrt{p^2-\alpha^2})$
1.61	$f(t)+\alpha\int\limits_0^t f(\sqrt{t^2-\tau^2})\,I_1(\tau)\,d\tau$	$\frac{p}{\sqrt{p^2-\alpha^2}}\bar{f}(\sqrt{p^2-\alpha^2})$
1.62	$\int\limits_0^t \psi(\tau,t-\tau)\,f(\tau)\,d\tau$	$\frac{p}{p+\sqrt{p}}\bar{f}(p+\sqrt{p})$
1.63	$\int\limits_0^t \chi(\tau,t-\tau)\,f(\tau)\,d\tau$	$\frac{\sqrt{p}}{p+\sqrt{p}}\bar{f}(p+\sqrt{p})$
1.64	$\int\limits_0^\infty \frac{t^\xi f'(\xi)}{\Gamma(\xi+1)}\,d\xi+f(0)$	$\bar{f}(\ln p)$
1.65	$\int\limits_0^\infty \frac{t^{\xi-1}}{\Gamma(\xi)}f(\xi)\,d\xi$	$\frac{p\bar{f}(\ln p)}{\ln p}$
1.66	$\int\limits_0^\infty \frac{t^{\nu\xi-1}}{\Gamma(\nu\xi)}f(\xi)\,d\xi$	$\frac{p\bar{f}(\ln p^\nu)}{\ln p^\nu}$
1.67	$\frac{d}{dt}\int\limits_0^t f(t-\xi)\,g(\xi)\,d\xi$	$\bar{f}(p)\,\bar{g}(p)$
1.68	$\int\limits_0^{\frac{t}{c}} (t-cu)^{\nu-1}\times$ $\times\exp\left[-a(t-cu)-\frac{u^2}{8(t-cu)}\right]\times$ $\times D_{1-2\nu}\left(\frac{u}{\sqrt{2(t-cu)}}\right)f(u)\,du$ $c>0$	$2^{\frac{1}{2}-\nu}\pi^{\frac{1}{2}}\frac{p\bar{f}(cp+\sqrt{p+a})}{(p+a)^\nu(cp+\sqrt{p+a})}$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
1.69	$\frac{1}{\sqrt{t}}\int\limits_0^t \frac{J_1(\alpha\sqrt{t(t+2u)})}{\sqrt{t(t+2u)}}\times$ $\times e^{-\beta u}uf(u)\,du$	$\frac{p}{\alpha}\left[\frac{\bar{f}(\beta)}{\beta}-\frac{\bar{f}(\beta+\sqrt{p^2+\alpha^2}-p)}{(\beta+\sqrt{p^2+\alpha^2}-p)}\right]$
1.70	$t^{\frac{\nu}{2}}\int\limits_0^\infty (t+2u)^{-\frac{\nu}{2}}\times$ $\times I_\nu(a\sqrt{t(t+2u)})f(u)\,du,$ $\operatorname{Re}\nu>-1$	$a^{\nu-2}\frac{p}{\sqrt{p^2+a^2}}(p+\sqrt{p^2+a^2})^{1-\nu}\times$ $\times\bar{f}(\sqrt{p^2+a^2}-p)$
1.71	$t^{\frac{\nu}{2}}\int\limits_0^\infty (t-2u)^{-\frac{\nu}{2}}\times$ $\times I_\nu(a\sqrt{t(t-2u)})f(u)\,du$ $\operatorname{Re}\nu>-1$	$-a^{\nu-2}\frac{p}{\sqrt{p^2+a^2}}(p+\sqrt{p^2+a^2})^{1-\nu}\times$ $\times\bar{f}(p-\sqrt{p^2+a^2})$
1.72	$\int\limits_0^t\left(\frac{t-u}{t+u}\right)^{\frac{\nu}{2}}\times$ $\times I_\nu[\alpha\sqrt{t^2-u^2}]f(u)\,du$ $\operatorname{Re}\nu>-1$	$\frac{\alpha^\nu p\bar{f}(\sqrt{p^2-\alpha^2})}{(p^2-\alpha^2)(p+\sqrt{p^2-\alpha^2})^\nu}$
1.73	$\frac{1}{\sqrt{t}}\int\limits_0^\infty e^{-\beta u}(t+2u)^{-\frac{1}{2}}\times$ $\times I_1[\alpha\sqrt{t(t+2u)}]uf(u)\,du$	$\frac{p}{\alpha}\left[\frac{\bar{f}(\beta+\sqrt{p^2-\alpha^2}-p)}{\beta+\sqrt{p^2-\alpha^2}-p}-\frac{\bar{f}(\beta)}{\beta}\right]$
1.74	$t^{\frac{\nu}{2}}\int\limits_0^\infty (t+2u)^{-\frac{\nu}{2}}\times$ $\times I_\nu[\alpha\sqrt{t(t+2u)}]f(u)\,du$ $\operatorname{Re}\nu>-1$	$\frac{-\alpha^{\nu-2}p\bar{f}(\sqrt{p^2-\alpha^2}-p)}{\sqrt{p^2-\alpha^2}(p+\sqrt{p^2-\alpha^2})^{\nu-1}}$
1.75	$t^{\frac{\nu}{2}}\int\limits_0^\infty (t-2u)^{-\frac{\nu}{2}}\times$ $\times I_\nu[\alpha\sqrt{t(t-2u)}]f(u)\,du$ $\operatorname{Re}\nu>-1$	$\frac{\alpha^{\nu-2}p\bar{f}(p-\sqrt{p^2-\alpha^2})}{\sqrt{p^2-\alpha^2}(p+\sqrt{p^2-\alpha^2})^{\nu-1}}$

§ 2. Рациональные и иррациональные функции

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
2.1	1	1
2.2	0 при $0<t<a$ 1 при $a<t<b$ 0 при $t>b$	$e^{-ap}-e^{-bp}$
2.3	0 при $0<t<a$ 1 при $t>a$	e^{-ap}
2.4	1 при $0<t<a$ 0 при $t>a$	$1-e^{-ap}$
2.5	1 при $0<t<a$ -1 при $a<t<2a$ 0 при $t>2a$	$(1-e^{-ap})^2$
2.6	0 при $0<t<2a$ 1 при $2a<t<a+b$ -1 при $a+b<t<2b$ 0 при $t>2b$	$(e^{-ap}-e^{-bp})^2$
2.7	t при $0<t<a$ $2a-t$ при $a<t<2a$ 0 при $t>2a$	$\frac{(1-e^{-ap})^2}{p}$
2.8	0 при $0<t<2a$ $t-2a$ при $2a<t<a+b$ $2b-t$ при $a+b<t<2b$ 0 при $t>2b$	$\frac{(e^{-ap}-e^{-bp})^2}{p}$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
2.9	t	$\frac{1}{p}$
2.10	$\frac{t^{n-1}}{(n-1)!}$ $n=1,\ 2,\ 3$	$\frac{1}{p^{n-1}}$
2.11	0 при $0<t<a$ $t-a$ при $a<t<b$ $b-a$ при $t>b$	$\frac{e^{-ap}-e^{-bp}}{p}$
2.12	t при $0<t<a$ a при $t>a$	$\frac{1-e^{-ap}}{p}$
2.13	t^n	$\frac{n!}{p^n}$, $\mathrm{Re}\,p>0$
2.14	0 при $0<t<a$ t^n при $t>a$	$e^{-ap}\sum_{m=0}^{n}\frac{n!}{m!}\frac{a^m}{p^{n-m}}$
2.15	t^n при $0<t<a$ 0 при $t>a$	$\frac{n!}{p^n}-e^{-ap}\sum_{m=0}^{n}\frac{n!}{m!}\frac{a^m}{p^{n-m}}$
2.16	1 при $2na<t<(2n+1)a$ 0 при $(2n+1)a<t<(2n+2)a$ $n=0,\ 1,\ 2,\ \ldots;\ a>0$	$\frac{1}{1+e^{-ap}}$
2.17	0 при $2na<t<(2n+1)a$ 1 при $(2n+1)a<t<(2n+2)a$ $n=0,\ 1,\ 2,\ \ldots$	$\frac{1}{1+e^{ap}}$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
2.18	1 при $na<t<\left(n+\frac{1}{\nu}\right)a$ 0 при $\left(n+\frac{1}{\nu}\right)a<t<(n+1)a$ $\nu>1,\quad n=0, 1, 2, \ldots$	$\frac{1-e^{-\frac{a}{\nu}p}}{1-e^{-ap}}$
2.19	1 при $2na<t<(2n+1)a$ —1 при $(2n+1)a<t<(2n+2)a$ $n=0,\ 1,\ 2,\ \ldots$	$\frac{1-e^{-ap}}{1+e^{-ap}}$
2.20	—1 при $2na<t<(2n+1)a$ 1 при $(2n+1)a<t<(2n+2)a$ $n=0,\ 1,\ 2,\ \ldots$	$\frac{e^{-ap}-1}{1+e^{-ap}}$
2.21	0 при $0<t<a$ 1 при $(2n+1)a<t<(2n+2)a$ —1 при $(2n+2)a<t<(2n+3)a$ $n=0,\ 1,\ 2,\ \ldots$	$\frac{1-e^{-ap}}{1+e^{ap}}$
2.22	$\frac{1}{2}+(-1)^n\frac{1}{2^{n+1}}$ при $na<t<(n+1)a$ $n=0,\ 1,\ 2,\ \ldots$	$\frac{4-e^{-ap}}{4+2e^{-ap}}$
2.23	0 при $2na<t<(2n+1)a$ 1 при $(4n+1)a<t<(4n+2)a$ —1 при $(4n+3)a<t<(4n+4)a$ $n=0,\ 1,\ 2,\ \ldots$	$\frac{1-e^{-ap}}{e^{ap}+e^{-ap}}$
2.24	$[t]^2$	$(e^p+1)(e^p-1)^{-2}$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt} f(t)\,dt$
2.25	0 при $na < t < \left(n+\frac{1}{\lambda}\right)a$ 1 при $\left(n+\frac{1}{\lambda}\right)a < t < \left(n+\frac{1}{\mu}\right)a$ 0 при $\left(n+\frac{1}{\mu}\right)a < t < \left(n+\frac{1}{\nu}\right)a$ —1 при $\left(n+\frac{1}{\nu}\right)a < t < (n+1)a$ $1 < \nu < \mu < \lambda, \quad n=0, 1, 2, \ldots$	$\dfrac{e^{-\frac{a}{\lambda}p} - e^{-\frac{a}{\mu}p} + e^{-ap} - e^{-\frac{a}{\nu}p}}{1-e^{-ap}}$
2.26	$\frac{t}{a} - 2n$ при $2na < t < (2n+1)a$ $-\frac{t}{a} + 2(n+1)$ при $(2n+1)a <$ $< t < (2n+2)a, \quad n=0, 1, 2, \ldots$	$\dfrac{1-e^{-ap}}{ap(1+e^{-ap})}$
2.27	$\frac{t}{a} - 4n$ при $4na < t < (4n+1)a$ $-\frac{t}{a} + 4n + 2$ при $(4n+1)a < t <$ $< (4n+2)a$ 0 при $(4n+2)a < t < (4n+4)a$ $n=0, 1, 2, \ldots$	$\dfrac{(1-e^{-ap})^2}{ap(1-e^{-4ap})}$
2.28	$\frac{2\nu}{a}t - 2\nu n$ при $na < t < \left(n+\frac{1}{2\nu}\right)a$ $-\frac{2\nu}{a}t + 2\nu n + 2$ при $\left(n+\frac{1}{2\nu}\right)a < t < \left(n+\frac{1}{\nu}\right)a$ 0 при $\left(n+\frac{1}{\nu}\right)a < t < (n+1)a$ $\nu > 1, \quad n=0, 1, 2, \ldots$	$\dfrac{2\nu\left(1-e^{-\frac{ap}{2\nu}}\right)^2}{ap(1-e^{-ap})}$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
2.29	$\frac{t}{a}-2n$ при $2na<t<\left(2n+\frac{1}{\mu}\right)a$ $\frac{1}{\mu}$ при $\left(2n+\frac{1}{\mu}\right)a<t<$ $<\left(2n+2-\frac{1}{\mu}\right)a$ $-\frac{t}{a}+2n+2$ при $\left(2n+2-\frac{1}{\mu}\right)a<t<(2n+2)a$ $\mu>1,\quad n=0,1,2,\ldots$	$\frac{\left(1-e^{-\frac{a}{\mu}p}\right)\left[1-e^{-\left(2-\frac{1}{\mu}\right)ap}\right]}{ap\left(1-e^{-2ap}\right)}$
2.30	$\frac{t}{a}-4n$ при $4na<t<\left(4n+\frac{1}{\mu}\right)a$ $\frac{1}{\mu}$ при $\left(4n+\frac{1}{\mu}\right)a<t<$ $<\left(4n+2-\frac{1}{\mu}\right)a$ $-\frac{t}{a}+4n+2$ при $\left(4n+2-\frac{1}{\mu}\right)a<$ $<t<(4n+2)a$ 0 при $(4n+2)a<t<(4n+4)a$ $\mu>1,\quad n=0,1,2,\ldots$	$\frac{\left(1-e^{-\frac{ap}{\mu}}\right)\left[1-e^{-\left(2-\frac{1}{\mu}\right)ap}\right]}{ap\left(1-e^{-4ap}\right)}$
2.31	$\frac{2\nu}{a}t-2\nu n$ при $na<t<$ $<\left(n+\frac{1}{2\nu\mu}\right)a$ $\frac{1}{\mu}$ при $\left(n+\frac{1}{2\nu\mu}\right)a<t<$ $<\left(n+\frac{2\mu-1}{2\nu\mu}\right)a$	$\frac{2\nu\left[1-e^{-\frac{ap}{2\nu\mu}}-e^{-\frac{(2\mu-1)}{2\nu\mu}ap}+e^{-\frac{ap}{\nu}}\right]}{ap\left(1-e^{-ap}\right)}$

№	$f(t)$	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
	$-\frac{2\nu}{a}t+2\nu n+2$ при $\left(n+\frac{2\mu-1}{2\nu\mu}\right)a<t<\left(n+\frac{1}{\nu}\right)a$ 0 при $\left(n+\frac{1}{\nu}\right)a<t<(n+1)a$ $\nu,\ \mu>1;\quad n=0,1,2,\ldots$	
2.32	$\frac{\nu t}{a}-n$ при $na<t<\left(n+\frac{1}{\nu}\right)a$ $-\frac{\nu}{a(\nu-1)}t+\frac{\nu(n+1)}{\nu-1}$ при $\left(n+\frac{1}{\nu}\right)a<t<(n+1)a$ $\nu>1,\quad n=0,1,2,\ldots$	$\frac{\nu(\nu-1)+\nu e^{-ap}-\nu^2 e^{-\frac{ap}{\nu}}}{(\nu-1)ap(1-e^{-ap})}$
2.33	$\frac{\nu}{a}t-2n$ при $2na<t<$ $<\left(2n+\frac{1}{\nu}\right)a$ $-\frac{\nu}{a(\nu-1)}t+\frac{\nu(2n+1)}{\nu-1}$ при $\left(2n+\frac{1}{\nu}\right)a<t<(2n+1)a$ 0 при $(2n+1)a<t<(2n+2)a$ $\nu>1,\quad n=0,1,2,\ldots$	$\frac{\nu(\nu-1)+\nu e^{-ap}-\nu^2 e^{-\frac{ap}{\nu}}}{(\nu-1)ap(1-e^{-2ap})}$

№	$f(t)$	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
2.34	$\frac{\lambda\nu}{a}t-\lambda\nu n$ при $na<t<\left(n+\frac{1}{\lambda\nu}\right)a$ $-\frac{\lambda\nu}{a(\nu-1)}t+\frac{\nu(n+1)}{\nu-1}$ при $\left(n+\frac{1}{\lambda\nu}\right)a<t<\left(n+\frac{1}{\lambda}\right)a$ 0 при $\left(n+\frac{1}{\lambda}\right)a<t<(n+1)a$ $\lambda, \nu>1;\quad n=0, 1, 2, \ldots$	$\frac{\lambda\nu(\nu-1)+\lambda\nu e^{-\frac{ap}{\lambda}}-\lambda\nu^2 e^{-\frac{ap}{\lambda\nu}}}{a(\nu-1)p(1-e^{-ap})}$
2.35	$\frac{t}{a}-n$ при $na<t<(n+1)a$ $n=0, 1, 2, \ldots$	$\frac{ap+1-e^{ap}}{ap(1-e^{ap})}$
2.36	$\frac{t}{a}-2n$ при $2na<t<(2n+1)a$ 0 при $(2n+1)a<t<(2n+2)a$ $n=0, 1, 2, \ldots$	$\frac{1-(1+ap)e^{-ap}}{ap(1-e^{-2ap})}$
2.37	$\frac{\nu}{a}t-\nu n$ при $na<t<\left(n+\frac{1}{\nu}\right)a$ 0 при $\left(n+\frac{1}{\nu}\right)a<t<(n+1)a$ $\nu>1,\quad n=0, 1, 2, \ldots$	$\frac{\nu-(\nu+ap)e^{-\frac{ap}{\nu}}}{ap(1-e^{-ap})}$
2.38	$\frac{t}{a}-n$ при $na<t<\left(n+\frac{1}{\mu}\right)a$ $\frac{1}{\mu}$ при $\left(n+\frac{1}{\mu}\right)a<t<(n+1)a$ $\mu>1,\quad n=0, 1, 2, \ldots$	$\frac{\mu-\mu e^{-\frac{ap}{\mu}}-ape^{-ap}}{a\mu p(1-e^{-ap})}$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
2.39	$\frac{t}{a}-2n$ при $2na<t<\left(2n+\frac{1}{\mu}\right)a$ $\frac{1}{\mu}$ при $\left(2n+\frac{1}{\mu}\right)a<t<$ $<(2n+1)a$ 0 при $(2n+1)a<t<(2n+2)a$ $\mu>1,\quad n=0,1,2,\ldots$	$\frac{\mu-\mu e^{-\frac{ap}{\mu}}-ape^{-ap}}{a\mu p(1-e^{-2ap})}$
2.40	$\frac{\nu}{a}t-\nu n$ при $na<t<\left(n+\frac{1}{\nu\mu}\right)a$ $\frac{1}{\mu}$ при $\left(n+\frac{1}{\nu\mu}\right)a<t<$ $<\left(n+\frac{1}{\nu}\right)a$ 0 при $\left(n+\frac{1}{\nu}\right)a<t<(n+1)a$ $\nu,\mu>1;\quad n=0,1,2,\ldots$	$\frac{\mu\nu-\mu\nu e^{-\frac{ap}{\nu\mu}}-ape^{-\frac{ap}{\nu}}}{a\mu p(1-e^{-ap})}$
2.41	$\frac{2t}{a}-(2n+1)$ при $na<t<(n+1)a$ $n=0,1,2,\ldots$	$\frac{2-ap-(2+ap)e^{-ap}}{ap(1-e^{-ap})}$
2.42	$-\frac{1}{\mu}$ при $na<t<\left(n+\frac{\mu-1}{2\mu}\right)a$ $\frac{2t}{a}-(2n+1)$ при $\left(n+\frac{\mu-1}{2\mu}\right)a<t<$ $<\left(n+\frac{\mu+1}{2\mu}\right)a$ $-\frac{1}{\mu}$ при $\left(n+\frac{\mu+1}{2\mu}\right)a<t<$ $<(n+1)a$ $\mu>1;\quad n=0,1,2,\ldots$	$\frac{2\mu e^{-\frac{ap}{2}}\left(e^{\frac{ap}{2\mu}}-e^{-\frac{ap}{2\mu}}\right)-ap(1+e^{-ap})}{a\mu p(1-e^{-ap})}$

№	$f(t)$	$\overline{f}(p) = p\int_0^\infty e^{-pt} f(t)\,dt$
2.43	$\frac{2t}{a} - (4n+1)$ при $2na < t < (2n+1)a$ $-\frac{2t}{a} + 4n + 3$ при $(2n+1)a < t < (2n+2)a$ $n = 0, 1, 2, \ldots$	$\frac{2(1-e^{-ap})}{ap(1+e^{-ap})} - 1$
2.44	$-\frac{1}{\mu}$ при $2na < t < \left(2n + \frac{\mu-1}{2\mu}\right)a$ $\frac{2t}{a} - (4n+1)$ при $\left(2n + \frac{\mu-1}{2\mu}\right)a < t < \left(2n + \frac{\mu+1}{2\mu}\right)a$ $\frac{1}{\mu}$ при $\left(2n + \frac{\mu+1}{2\mu}\right)a < t < \left(2n + \frac{3\mu-1}{2\mu}\right)a$ $-\frac{2t}{a} + 4n + 3$ при $\left(2n + \frac{3\mu-1}{2\mu}\right)a < t < \left(2n + \frac{3\mu+1}{2\mu}\right)a$ $-\frac{1}{\mu}$ при $\left(2n + \frac{3\mu+1}{2\mu}\right)a < t < (2n+2)a$ $\mu > 1, \quad n = 0, 1, 2, \ldots$	$\frac{2\left(e^{-\frac{\mu-1}{2\mu}ap} - e^{-\frac{\mu+1}{2\mu}ap}\right)}{ap(1+e^{-ap})} - \frac{1}{\mu}$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
2.45	$n\left(t-\frac{(n+1)a}{2}\right)$ при $na\leqslant t<(n+1)a$ 0 при $0<t<a$ $n\geqslant 1$	$\frac{1}{p(e^{ap}-1)}$
2.46	0 при $0<t<b$ $\frac{1}{t+a}$ при $t>b$ $\|\arg(a+b)\|<\pi$	$-pe^{ap}\,\mathrm{Ei}[-(a+b)p]$
2.47	0 при $0<t<b$ $\frac{1}{t+a}$ при $b<t<c$ 0 при $t>c$ $-a$ не между b и c	$pe^{ap}\{\mathrm{Ei}[-(a+c)p]-$ $-\mathrm{Ei}[-(a+b)p]\}$
2.48	$\frac{1}{(t+a)^n}$, $n\geqslant 2$, $\|\arg a\|<\pi$	$-\sum\limits_{m=1}^{n-1}\frac{(m-1)!}{(n-1)!}\frac{(-p)^{n-m}}{a^m}+$ $+\frac{(-p)^n}{(n-1)!}e^{ap}\,\mathrm{Ei}(-ap)$
2.49	0 при $0<t<b$ $\frac{1}{(t+a)^n}$ при $t>b$ $\|\arg(a+b)\|<\pi$, $n\geqslant 2$	$-e^{-bp}\sum\limits_{m=1}^{n-1}\frac{(m-1)!}{(n-1)!}\frac{(-p)^{n-m}}{(a+b)^m}+$ $+\frac{(-p)^n}{(n-1)!}e^{ap}\,\mathrm{Ei}[-(a+b)p]$
2.50	$\frac{t^n}{t+a}$, $n\geqslant 1$, $\|\arg a\|<\pi$	$(-1)^{n-1}a^n pe^{ap}\,\mathrm{Ei}(-ap)+$ $+\sum\limits_{m=1}^{n}(m-1)!(-a)^{n-m}p^{1-m}$
2.51	$\frac{At+Ba}{t^2-a^2}$, $\|\arg(\pm a)\|<\pi$	$-\frac{A-B}{2}pe^{ap}\,\mathrm{Ei}(-ap)-$ $-\frac{A+B}{2}pe^{-ap}\,\mathrm{Ei}(ap)$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
2.52	$\dfrac{At+Ba}{t^2+a^2}$ $\quad \lvert\arg(\pm ia)\rvert<\pi$	$(A\cos ap-B\sin ap)\,p\operatorname{ci}(ap)-$ $-(A\sin ap+B\cos ap)\,p\operatorname{si}(ap)$
2.53	0 при $0<t<a$ $\dfrac{1}{\sqrt{t}}$ при $t>a$	$\sqrt{\pi p}\operatorname{erfc}(\sqrt{ap})$
2.54	$\dfrac{1}{\sqrt{t}}$ при $0<t<a$ 0 при $t>a$	$\sqrt{\pi p}\operatorname{erf}(\sqrt{ap})$
2.55	$t^{n-\frac{1}{2}}$	$\sqrt{\pi}\,\frac{1}{2}\cdot\frac{3}{2}\cdots\left(n-\frac{1}{2}\right)p^{-n+\frac{1}{2}}$
2.56	$\dfrac{1}{\sqrt{t+a}}$, $\quad\lvert\arg a\rvert<\pi$	$\sqrt{\pi p}\,e^{ap}\operatorname{erfc}(\sqrt{ap})$
2.57	0 при $0<t<a$ $t^{-\frac{3}{2}}$ при $t>a$	$\dfrac{2}{\sqrt{a}}\,pe^{-ap}-2\sqrt{\pi p}\,p\operatorname{erfc}(\sqrt{ap})$
2.58	$\dfrac{1}{(t+a)^{3/2}}$, $\quad\lvert\arg a\rvert<\pi$	$\dfrac{2p}{\sqrt{a}}-2\sqrt{\pi p}\,pe^{ap}\operatorname{erfc}(\sqrt{ap})$
2.59	$\dfrac{\sqrt{t}}{t+a}$, $\quad\lvert\arg a\rvert<\pi$	$p\sqrt{\dfrac{\pi}{p}}-\pi\sqrt{a}\,pe^{ap}\operatorname{erfc}(\sqrt{ap})$
2.60	0 при $0<t<a$ $\dfrac{\sqrt{t-a}}{t}$ при $t>a$	$\sqrt{\dfrac{\pi}{p}}\,pe^{-ap}-\pi\sqrt{a}\,p\operatorname{erfc}(\sqrt{ap})$
2.61	$\dfrac{1+2at}{\sqrt{t}}$	$\sqrt{\dfrac{\pi}{p}}\,(p+a)$
2.62	$\dfrac{1}{\sqrt{t}\,(t+a)}$, $\quad\lvert\arg a\rvert<\pi$	$\dfrac{\pi}{\sqrt{a}}\,pe^{ap}\operatorname{erfc}(\sqrt{ap})$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
2.63	0 при $0<t<a$ $\frac{1}{t\sqrt{t-a}}$ при $t>a$	$\frac{\pi}{\sqrt{a}}\,p\,\mathrm{erfc}\,(\sqrt{ap})$
2.64	$\frac{t}{\sqrt{t^2+a^2}}$, $\lvert\arg a\rvert<\frac{\pi}{2}$	$\frac{\pi a}{2}\,p\,[\mathbf{H}_1(ap)-Y_1(ap)]-ap$
2.65	$\frac{t}{\sqrt{a^2-t^2}}$ при $0<t<a$ 0 при $t>a$	$\frac{\pi a}{2}\,p\,[\mathbf{L}_1(ap)-I_1(ap)]+ap$
2.66	0 при $0<t<a$ $\frac{t}{\sqrt{t^2-a^2}}$ при $t>a$	$apK_1(ap)$
2.67	$\frac{t+a}{\sqrt{t^2+2at}}$, $\lvert\arg a\rvert<\pi$	$ape^{ap}K_1(ap)$
2.68	$\frac{a-t}{\sqrt{2at-t^2}}$ при $0<t<2a$ 0 при $t>2a$	$\pi ape^{-ap}I_1(ap)$
2.69	$\frac{1}{t+\sqrt{t^2+a^2}}$, $\lvert\arg a\rvert<\frac{\pi}{2}$	$\frac{\pi}{2a}[\mathbf{H}_1(ap)-Y_1(ap)]-\frac{1}{a^2p}$
2.70	$\sin\theta\,(1+t+\cos\theta)^{-1}(t^2+2t)^{-\frac{1}{2}}$	$p\exp\left[2p\cos^2\left(\frac{\theta}{2}\right)\right]\times$ $\times[\theta-\sin\theta\int_0^p K_0(u)\,e^{-u\cos\theta}du]$
2.71	$(t+\sqrt{t^2+1})^n+(t-\sqrt{t^2+1})^n$	$2pO_n(p)$
2.72	$\frac{(t+\sqrt{t^2+1})^n}{\sqrt{t^2+1}}$	$\frac{p}{2}[S_n(p)-\pi\mathbf{E}_n(p)-\pi Y_n(p)]$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
2.73	$\dfrac{[t-\sqrt{t^2+1}]^n}{\sqrt{t^2+1}}$	$-\dfrac{p}{2}[S_n(p)+\pi\,\mathrm{E}_n(p)+\pi Y_n(p)]$
2.74	$t^\nu,\quad \operatorname{Re}\nu>-1$	$\dfrac{\Gamma(\nu+1)}{p^\nu}$
2.75	0 при $0<t<a$ t^ν при $t>a$	$p^{-\nu}\Gamma(\nu+1,\ ap)$
2.76	t^ν при $0<t<a$ 0 при $t>a$ $\operatorname{Re}\nu>-1$	$p^{-\nu}\gamma(\nu+1,\ ap)$
2.77	$(t+a)^\nu,\quad \lvert\arg a\rvert<\pi$	$p^{-\nu}e^{ap}\Gamma(\nu+1,\ ap)$
2.78	0 при $0<t<a$ $(t-a)^\nu$ при $t>a$ $\operatorname{Re}\nu>-1$	$\Gamma(\nu+1\ \ p^{-\nu}e^{-ap}$
2.79	$(a-t)^\nu$ при $0<t<a$ 0 при $t>a$ $\operatorname{Re}\nu>-1$	$p^{-\nu}e^{-ap}\gamma(\nu+1,\ -ap)$
2.80	$\dfrac{t^\nu}{t+a},\quad \lvert\arg a\rvert<\pi,\quad \operatorname{Re}\nu>-1$	$\Gamma(\nu+1)\,a^\nu pe^{ap}\Gamma(-\nu,\ ap)$
2.81	0 при $0<t<a$ $\dfrac{(t-a)^\nu}{t}$ при $t>a$ $\operatorname{Re}\nu>-1$	$\Gamma(\nu+1)\,a^\nu p\Gamma(-\nu,\ ap)$
2.82	$\dfrac{t^{\nu-1}}{t^2+1},\quad \operatorname{Re}\nu>0$	$\pi\operatorname{cosec}(\nu\pi)\,pV_\nu(2p,\ 0)$
2.83	$(1+t^2)^{\nu-\frac{1}{2}}$	$2^{\nu-1}\sqrt{\pi}\,\Gamma\left(\nu+\dfrac{1}{2}\right)p^{1-\nu}\times$ $\times[\mathbf{H}_\nu(p)-Y_\nu(p)]$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
2.84	0 при $0<t<a$ $(t^2-a^2)^{\nu-\frac{1}{2}}$ при $t>a$ $\operatorname{Re}\nu>-\frac{1}{2}$	$\frac{\Gamma\left(\nu+\frac{1}{2}\right)}{\sqrt{\pi}}\left(\frac{2a}{p}\right)^{\nu} pK_\nu(ap)$
2.85	$(a^2-t^2)^{\nu-\frac{1}{2}}$ при $0<t<a$ 0 при $t>a$ $\operatorname{Re}\nu>-\frac{1}{2}$	$\frac{\sqrt{\pi}}{2}\Gamma\left(\nu+\frac{1}{2}\right)(2a)^{\nu}\frac{1}{p^{\nu-1}}\times$ $\times[I_\nu(ap)-\mathbf{L}_\nu(ap)]$
2.86	$(t^2+2at)^{\nu-\frac{1}{2}}$, $\lvert\arg a\rvert<\pi$ $\operatorname{Re}\nu>-\frac{1}{2}$	$\frac{\Gamma\left(\nu+\frac{1}{2}\right)}{\sqrt{\pi}}(2a)^{\nu}\frac{1}{p^{\nu-1}}e^{ap}K_\nu(ap)$
2.87	$(2at-t^2)^{\nu-\frac{1}{2}}$ при $0<t<2a$ 0 при $t>2a$ $\operatorname{Re}\nu>-\frac{1}{2}$	$\sqrt{\pi}\,\Gamma\left(\nu+\frac{1}{2}\right)(2a)^{\nu}\frac{1}{p^{\nu-1}}\times$ $\times e^{-ap}I_\nu(ap)$
2.88	$(t^2+it)^{\nu-\frac{1}{2}}$, $\operatorname{Re}\nu>-\frac{1}{2}$	$-\frac{i\sqrt{\pi}}{2}\Gamma\left(\nu+\frac{1}{2}\right)p^{1-\nu}\times$ $\times e^{\frac{ip}{2}}H_\nu^{(2)}\left(\frac{p}{2}\right)$
2.89	$(t^2-it)^{\nu-\frac{1}{2}}$, $\operatorname{Re}\nu>-\frac{1}{2}$	$\frac{i\sqrt{\pi}}{2}\Gamma\left(\nu+\frac{1}{2}\right)p^{1-\nu}\times$ $\times e^{-\frac{ip}{2}}H_\nu^{(1)}\left(\frac{p}{2}\right)$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
2.90	0 при $0<t<2b$ $\left(\frac{t+2a}{t-2b}\right)^{\nu}$ при $t>2b$ $\lvert\arg(a+b)\rvert<\pi,\quad \operatorname{Re}\nu<1$	$\nu\pi\operatorname{cosec}(\nu\pi)\,e^{-(a+b)p}\,k_{2\nu}[(a+b)\,p]$
2.91	0 при $0<t<a$ $\frac{(t-a)^{\nu-1}}{(t+a)^{\nu-\frac{1}{2}}}$ при $t>a$ $\operatorname{Re}\nu>0$	$2^{\nu-\frac{1}{2}}\Gamma(\nu)\sqrt{p}\,D_{1-2\nu}(2\sqrt{ap})$
2.92	0 при $0<t<a$ $\frac{(t-a)^{\nu-1}}{(t+a)^{\nu+\frac{1}{2}}}$ при $t>a$ $\operatorname{Re}\nu>0$	$\frac{2^{\nu-\frac{1}{2}}\Gamma(\nu)}{\sqrt{a}}\,pD_{-2\nu}(2\sqrt{ap})$
2.93	$t^{\nu-1}(t+a)^{-\nu+\frac{1}{2}}$ $\operatorname{Re}\nu>0,\quad \lvert\arg a\rvert<\pi$	$2^{\nu-\frac{1}{2}}\Gamma(\nu)\sqrt{p}\,e^{\frac{ap}{2}}\,D_{1-2\nu}(\sqrt{2ap})$
2.94	$\frac{t^{\nu-1}}{(t+a)^{\nu+\frac{1}{2}}}$, $\operatorname{Re}\nu>0$, $\lvert\arg a\rvert<\pi$	$\frac{2^{\nu}\Gamma(\nu)}{\sqrt{a}}\,pe^{\frac{ap}{2}}\,D_{-2\nu}(\sqrt{2ap})$
2.95	0 при $0<t<b$ $(t+a)^{2\mu-1}(t-b)^{2\nu-1}$ при $t>b$ $\operatorname{Re}\nu>0,\quad \lvert\arg(a+b)\rvert<\pi$	$\Gamma(2\nu)\,(a+b)^{\mu+\nu-1}p^{1-\mu-\nu}\times$ $\times e^{\frac{a-b}{2}p}\,W_{\mu-\nu,\,\mu+\nu-\frac{1}{2}}(ap+bp)$
2.96	0 при $0<t<a$ $(t-a)^{2\mu-1}(b-t)^{2\nu-1}$ при $a<t<b$ 0 при $t>b$ $\operatorname{Re}\mu>0,\quad \operatorname{Re}\nu>0$	$\mathrm{B}(2\mu,\,2\nu)\,(b-a)^{\mu+\nu-1}p^{1-\mu-\nu}\times$ $\times e^{-\frac{a+b}{2}p}\,M_{\mu-\nu,\,\mu+\nu-\frac{1}{2}}(bp-ap)$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
2.97	$t^{a-1}(1-t)^{b-1}(1-\sigma t)^{-\gamma}$ при $0<t<1$ 0 при $t>1$ $\operatorname{Re} a>0,\quad \operatorname{Re} b>0$ $\lvert\arg(1-\sigma)\rvert<\pi$	$B(a,b)\,p\,\Phi_1(a,\gamma,a+b;\sigma,-p)$
2.98	$\frac{1}{\sqrt{t^2+1}}$	$pS_{0,0}(p)$
2.99	$\frac{2}{\pi\sqrt{t^2+1}}$	$-p[\mathbf{E}_0(p)+Y_0(p)]$
2.100	$\frac{(\sqrt{t^2+1}+t)^\nu}{\pi\sqrt{t^2+1}}+$ $+\cos(\nu\pi)\frac{(\sqrt{t^2+1}-t)^\nu}{\pi\sqrt{t^2+1}}$	$-p[\mathbf{E}_\nu(p)+Y_\nu(p)]$
2.101	$(\sqrt{t^2+1}+t)^\nu$	$S_{1,\nu}(p)+\nu S_{0,\nu}(p)$
2.102	$(\sqrt{t^2+1}-t)^\nu$	$S_{1,\nu}(p)-\nu S_{0,\nu}(p)$
2.103	$\frac{1}{2\nu}[(\sqrt{t^2+1}+t)^\nu-$ $-(\sqrt{t^2+1}-t)^\nu]$	$S_{0,\nu}(p)$
2.104	$\frac{(\sqrt{t^2+1}+t)^\nu+(\sqrt{t^2+1}-t)^\nu}{2\sqrt{t^2+1}}$	$pS_{0,\nu}(p)$
2.105	$\frac{1}{2}[(\sqrt{t^2+1}+t)^\nu+(\sqrt{t^2+1}-t)^\nu]$	$S_{1,\nu}(p)$
2.106	$\frac{(\sqrt{t^2+1}+t)^\nu-(\sqrt{t^2+1}-t)^\nu}{\sqrt{t^2+1}}$	$2\nu pS_{-1,\nu}(p)$
2.107	$\frac{1}{2}\left(\nu-\frac{1}{\nu}\right)[(\sqrt{t^2+1}+t)^\nu-$ $-(\sqrt{t^2+1}-t)^\nu]$	$S_{2,\nu}(p)-p$

№	$f(t)$	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
2.108	$\dfrac{(\sqrt{t^2+1}-t)^\nu}{\sqrt{t^2+1}}$	$\dfrac{\pi p}{\sin\nu\pi}[\mathbf{J}_\nu(p)-J_\nu(p)]$
2.109	$\dfrac{(\sqrt{t^2+1}+t)^\nu}{\sqrt{t^2+1}}$	$\dfrac{\pi p}{\sin\nu\pi}[\mathbf{J}_{-\nu}(p)-J_{-\nu}(p)]$
2.110	0 при $0<t<1$ $\dfrac{(\sqrt{t^2-1}+t)^\nu+(\sqrt{t^2-1}+t)^{-\nu}}{\sqrt{t^2-1}}$ при $t>1$	$2pK_\nu(p)$
2.111	$(\sqrt{t+2a}+\sqrt{t})^{2\nu}-$ $-(\sqrt{t+2a}-\sqrt{t})^{2\nu}$, $\mid\arg a\mid<\pi$	$2^{\nu+1}\nu a^\nu e^{ap}K_\nu(ap)$
2.112	0 при $0<t<a$ $(\sqrt{t+a}+\sqrt{t-a})^{2\nu}-$ $-(\sqrt{t+a}-\sqrt{t-a})^{2\nu}$ при $t>a$	$2^{\nu+1}\nu a^\nu K_\nu(ap)$
2.113	$\dfrac{t^{-\nu-1}}{\sqrt{t^2+1}}(1+\sqrt{t^2+1})^{\nu+\frac{1}{2}}$ $\operatorname{Re}\nu<0$	$\sqrt{2}\,\Gamma(-\nu)\,pD_\nu(\sqrt{2ip})\,D_\nu(\sqrt{-2ip})$
2.114	$\dfrac{[t+\sqrt{t^2+4a^2}]^{2\nu}}{\sqrt{t^3+4a^2t}}$, $\operatorname{Re}a>0$	$\left(\dfrac{\pi p}{2}\right)^{\frac{3}{2}}\dfrac{1}{(2a)^{2\nu}}[J_{\nu+\frac{1}{4}}(ap)\times$ $\times Y_{\nu-\frac{1}{4}}(ap)-J_{\nu-\frac{1}{4}}(ap)\times$ $\times Y_{\nu+\frac{1}{4}}(ap)]$
2.115	0 при $0<t<1$ $\dfrac{(t+\sqrt{t^2-1})^{2\nu}+(t-\sqrt{t^2-1})^{2\nu}}{\sqrt{t(t^2-1)}}$ при $t>1$	$p\sqrt{\dfrac{2p}{\pi}}K_{\nu+\frac{1}{4}}\left(\dfrac{p}{2}\right)\times$ $\times K_{\nu-\frac{1}{4}}\left(\dfrac{p}{2}\right)$

№	$f(t)$	$\overline{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
2.116	0 при $(4n-1)a<t<(4n+1)a$ 2 при $(4n+1)a<t<(4n+3)a$ $n=0,\ 1,\ 2,\ \ldots$	$\frac{1}{\operatorname{ch}ap}$
2.117	$\frac{1}{2}$ при $2na<t<(2n+1)a$ $-\frac{1}{2}$ при $(2n-1)a<t<2na$ $n=0,\ 1,\ 2,\ \ldots$	$\frac{1}{2}\operatorname{th}\left(\frac{ap}{2}\right)$
2.118	n при $na<t<(n+1)a$, $n=0,\ 1,\ 2,\ \ldots$	$\frac{1}{e^{ap}-1}$
2.119	$n+1$ при $na<t<(n+1)a$, $n=0,\ 1,\ 2,\ \ldots$	$\frac{1}{1-e^{-ap}}$
2.120	$2n+1$ при $2na<t<2(n+1)a$ $n=0,\ 1,\ 2,\ \ldots$	$\operatorname{cth}ap$
2.121	0 при $0<t<a$ $2n$ при $(2n-1)a<t<(2n+1)a$ $n=0,\ 1,\ 2,\ \ldots$	$\frac{1}{\operatorname{sh}ap}$
2.122	n при $\pi^2n^2a<t<\pi^2(n+1)^2a$ $n=0,\ 1\ 2,\ \ldots$	$\frac{\vartheta_3(0,\ ap)-1}{2}$
2.123	0 при $0<t<\frac{\pi^2}{4}$ $2n+2$ при $\pi^2\left(n+\frac{1}{2}\right)^2<t<$ $<\pi^2\left(n+\frac{3}{2}\right)^2$ $n=0,\ 1,\ 2,\ \ldots$	$\vartheta_2(0,\ p)$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
2.124	n при $\ln n<t<\ln(n+1)$ $n=0, 1, 2, \ldots$	$\zeta(p)$
2.125	$\frac{1-a^n}{1-a}$ при $nb<t<(n+1)b$ $n=0, 1, 2, \ldots$	$\frac{1}{e^{bp}-a}$, $\operatorname{Re} p>0,\ b\operatorname{Re} p>\operatorname{Re}(\ln a)$
2.126	$\binom{n}{m}$ при $na<t<(n+1)a$ $n=0, 1, 2, \ldots$	$\frac{e^{-ap}}{(e^{ap}-1)^m}$
2.127	$2n+1$ при $\pi^2n^2<t<\pi^2(n+1)^2$ $n=0, 1, 2, \ldots$	$\vartheta_3(0, p)$
2.128	1 при $(2k)^2\pi^2<t<(2k+1)^2\pi^2$ -1 при $(2k+1)^2\pi^2<t<$ $<(2k+2)^2\pi^2$ $k=0, 1, 2, \ldots$	$\vartheta_0(0, p)$
2.129	n^m при $na<t<(n+1)a$ $n=0, 1, 2, \ldots$	$\frac{1-e^{-ap}}{(-a)^m}\frac{d^m}{dp^m}\left(\frac{1}{1-e^{-ap}}\right)$
2.130	0 при $0<t<a$ $2n(t-an)$ при $(2n-1)a<t<$ $<(2n+1)a,\quad n=1, 2, 3, \ldots$	$\frac{1}{p\operatorname{sh}(ap)}$
2.131	$a(t-nb)$ при $nb<t<(n+1)b$ $n=0, 1, 2, \ldots$	$\frac{a}{p}-\frac{ab}{2}\left[\operatorname{cth}\left(\frac{bp}{2}\right)-1\right]=$ $=\frac{a(e^{bp}-bp-1)}{p(e^{bp}-1)}$
2.132	$\frac{1-a^n}{1-a}t-b\frac{1-(n+1)a^n+na^{n+1}}{(1-a)^2}$ при $nb<t<(n+1)b$ $n=0, 1, 2, \ldots$	$\frac{1}{p(e^{bp}-a)}$, $\operatorname{Re} p>0,\ b\operatorname{Re} p>\operatorname{Re}\ln a$
2.133	$(2n+1)t-2bn(n+1)$ при $2nb<t<2(n+1)b$ $n=0, 1, 2, \ldots$	$\frac{\operatorname{cth}(bp)}{p}$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
2.134	$b-(-1)^n(2bn+b-t)$ при $2nb<t<2(n+1)b$ $n=0,1,2,\ldots$	$\dfrac{\operatorname{th}(bp)}{p}$
2.135	0 при $0<t<b$ $t-(-1)^n(t-2nb)$ при $(2n-1)b<t<(2n+1)b$ $n\geqslant 1$	$\dfrac{1}{p\operatorname{ch}(bp)}$
2.136	$\frac{1}{4}[1-(-1)^n](2t-a)+\frac{1}{2}(-1)^n an$ при $na<t<(n+1)a$ $n=0,1,2,\ldots$	$\dfrac{1}{p(e^{ap}+1)}$
2.137	$\frac{t^2}{2}$ при $0<t<1$ $1-\frac{(t-2)^2}{2}$ при $1<t<2$ 1 при $t>2$	$\dfrac{(1-e^{-p})^2}{p^2}$
2.138	$\frac{t^2}{2}$ при $0<t<1$ $\frac{3}{4}-\left(t-\frac{3}{2}\right)^2$ при $1<t<2$ $\frac{1}{2}(t-3)^2$ при $2<t<3$, 0 при $t>3$	$\dfrac{(1-e^{-p})^3}{p^2}$
2.139	$(t-na)^2$ при $na<t<(n+1)a$ $n=0,1,2,\ldots$	$\dfrac{2}{p^2}-\dfrac{a^2+2ap}{(e^{ap}-1)p}$
2.140	$[t]$ или n при $n\leqslant t<n+1$ $n=0,1,2,\ldots$	$\dfrac{1}{e^p-1}$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
2.141	$\left[\frac{t}{a}\right]$ или n при $na\leqslant t<(n+1)a$ $n=0, 1, 2, \ldots$	$\frac{1}{e^{ap}-1}$
2.142	$[t]+1$ или $n+1$ при $n\leqslant t<n+1$ $n=0, 1, 2, \ldots$	$\frac{1}{1-e^{-p}}$
2.143	$\left[\frac{t}{a}\right]+1$ или $n+1$ при $na\leqslant t<(n+1)a$ $n=0, 1, 2, \ldots$	$\frac{1}{1-e^{-ap}}$
2.144	$\frac{\alpha^{[t]}-1}{\alpha-1}$ или $\frac{\alpha^n-1}{\alpha-1}$ при $n\leqslant t<n+1$ $n=0, 1, 2, \ldots$	$\frac{1}{e^p-\alpha}$ $(\alpha\neq 1)$
2.145	$\alpha^{[t]}$ или α^n при $n\leqslant t<n+1$ $n=0, 1, 2, \ldots$	$\frac{e^p-1}{e^p-\alpha}$
2.146	$[t]\,\alpha^{[t]-1}$ или $n\alpha^{n-1}$ при $n\leqslant t<n+1$, $n=0, 1, 2, \ldots$	$\frac{e^p-1}{(e^p-\alpha)^2}$
2.147	$\frac{1}{2}[t]([t]-1)\,\alpha^{[t]-2}$ или $\frac{1}{2}n(n-1)\,\alpha^{n-2}$ при $n\leqslant t<n+1$ $n=0, 1, 2, \ldots$	$\frac{e^p-1}{(e^p-\alpha)^3}$
2.148	$\frac{\alpha^{[t]}-\beta^{[t]}}{\alpha-\beta}$ или $\frac{\alpha^n-\beta^n}{\alpha-\beta}$ при $n\leqslant t<n+1$ $n=0, 1, 2, \ldots$	$\frac{e^p-1}{(e^p-\alpha)(e^p-\beta)}$ $(\alpha\neq\beta)$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
2.149	$-\alpha\beta\,\frac{\alpha^{[t]-1}-\beta^{[t]-1}}{\alpha-\beta}$ или $-\alpha\beta\,\frac{\alpha^{n-1}-\beta^{n-1}}{\alpha-\beta}$ при $n\leqslant t<n+1,\ n=0,1,2,\ldots$	$\frac{(e^p-1)[e^p-(\alpha+\beta)]}{(e^p-\alpha)(e^p-\beta)}$ $(\alpha\neq\beta)$
2.150	$-([t]-1)\,\alpha^{[t]}$ или $-(n-1)\,\alpha^n$ при $n\leqslant t<n+1,\ n=0,1,2,\ldots$	$\frac{(e^p-1)(e^p-2\alpha)}{(e^p-\alpha)^2}$
2.151	$[t]^2\,\alpha^{[t]-1}$	$\frac{(e^p-1)(e^p+\alpha)}{(e^p-\alpha)^3}$
2.152	$a\alpha^{[t]}-b\beta^{[t]}$	$\frac{(e^p-1)[(a-b)e^p-(a\beta-b\alpha)]}{(e^p-\alpha)(e^p-\beta)}$

§ 3. Показательные функции

3.1	e^{-at}	$\frac{p}{p+a}$, $\operatorname{Re}p>-\operatorname{Re}a$
3.2	te^{-at}	$\frac{p}{(p+a)^2}$, $\operatorname{Re}p>-\operatorname{Re}a$
3.3	$t^{\nu-1}e^{-at}$, $\operatorname{Re}\nu>0$	$\Gamma(\nu)\frac{p}{(p+a)^\nu}$, $\operatorname{Re}p>-\operatorname{Re}a$
3.4	$\frac{e^{-at}-e^{-bt}}{t}$	$p[\ln(p+b)-\ln(p+a)]$ $\operatorname{Re}p>-\operatorname{Re}a,\ -\operatorname{Re}b$
3.5	$\frac{e^{at}-1}{a}$	$\frac{1}{p-a}$
3.6	$(1-at)\,e^{-at}$	$\frac{p^2}{(p+a)^2}$
3.7	$(1+at)\,e^{-at}$	$\frac{p(p+2a)}{(p+a)^2}$

№	$f(t)$	$\overline{f}(p)=p\int\limits_0^{\infty} e^{-pt} f(t)\,dt$
3.8	$1-4ate^{-at}$	$\frac{(p-a)^2}{(p+a)^2}$
3.9	$\frac{e^{-bt}-e^{-at}}{a-b}$	$\frac{p}{(p+a)(p+b)}$
3.10	$\frac{be^{-bt}-ae^{-at}}{b-a}$	$\frac{p^2}{(p+a)(p+b)}$
3.11	$\frac{ae^{-bt}-be^{-at}}{a-b}$	$\frac{p^2+(a+b)p}{(p+a)(p+b)}$
3.12	$\left(1-e^{-\frac{t}{a}}\right)^n$	$\frac{n!}{(ap+1)\ldots(ap+n)}$
3.13	$\frac{e^{-at}t^n}{\sqrt{\pi t}}$	$\frac{1\cdot 3\cdot 5\ldots(2n-1)}{2^n}\,\frac{p\sqrt{p+a}}{(p+a)^{n+1}}$
3.14	$\frac{e^{-at}}{\sqrt{\pi t}}$	$\frac{p}{\sqrt{p+a}}$
3.15	$t\sqrt{t}\,e^{-at}$	$\frac{3\sqrt{\pi}}{4}\,\frac{p}{(p+a)^2\sqrt{p+a}}$
3.16	$\frac{e^{-at}(1-2at)}{\sqrt{\pi t}}$	$\frac{p^2}{(p+a)\sqrt{p+a}}$
3.17	$\frac{e^{-at}[1+2(\alpha-a)t]}{\sqrt{\pi t}}$	$\frac{p(p+\alpha)}{(p+a)\sqrt{p+a}}$
3.18	$\frac{t^{\nu-2}(e^{-at}-e^{-bt})}{\Gamma(\nu-1)}$, $\operatorname{Re}\nu>0$	$\frac{p}{(p+a)^{\nu-1}}-\frac{p}{(p+b)^{\nu-1}}$
3.19	$\frac{(1-e^{-at})^2}{t^2}$	$p[(p+2a)\ln(p+2a)+p\ln p-$ $-2(p+a)\ln(p+a)]$ $\operatorname{Re}p\geqslant 0,\ -\operatorname{Re}2a$
3.20	$\frac{2+\alpha t}{2t^2}(e^{-\alpha t}-1)+\frac{\alpha}{t}$	$p\left[\left(p+\frac{\alpha}{2}\right)\ln\left(1+\frac{\alpha}{p}\right)-\alpha\right]$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
3.21	$\dfrac{\alpha te^{-\alpha t}+e^{-\alpha t}-1}{t^2}$	$p^2\ln\left(1+\dfrac{\alpha}{p}\right)-\alpha p$
3.22	$\dfrac{1}{t}-\dfrac{(t+2)(1-e^{-t})}{2t^2}$	$-p+p\left(p+\dfrac{1}{2}\right)\ln\left(1+\dfrac{1}{p}\right)$
3.23	$\dfrac{1}{1+e^{-t}}$	$\dfrac{p}{2}\psi\left(\dfrac{p+1}{2}\right)-\dfrac{p}{2}\psi\left(\dfrac{p}{2}\right)$
3.24	$\dfrac{1}{1-e^{-t}}-\dfrac{1}{t}$	$p[\ln p-\psi(p)]$
3.25	$\dfrac{1-e^{-\alpha t}}{1-e^{-t}}$	$p[\psi(p+\alpha)-\psi(p)]$ $\operatorname{Re} p>0,\quad -\operatorname{Re}\alpha$
3.26	$\dfrac{t}{1-e^{-t}}$	$p\psi'(p)$
3.27	$\dfrac{te^{-bt}}{1-\exp\left(-\dfrac{t}{a}\right)}$	$a^2p\psi'[a(p+b)]$
3.28	$\dfrac{(-t)^n}{1-e^{-t}}$	$-p\psi^{(n)}(p)$
3.29	$\dfrac{(-1)^{n-1}t^ne^{-bt}}{1-\exp\left(-\dfrac{t}{a}\right)}$	$a^{n+1}p\psi^{(n)}[a(p+b)]$
3.30	$\left[1-\exp\left(-\dfrac{t}{a}\right)\right]^{\nu-1}$ $\operatorname{Re} a>0,\quad \operatorname{Re}\nu>0$	$ap\mathrm{B}(ap,\nu)$
3.31	$\dfrac{t^{\nu-1}}{1-\exp\left(-\dfrac{t}{a}\right)},\quad \operatorname{Re}\nu>1$	$a^\nu\Gamma(\nu)p\zeta(\nu,ap)$
3.32	$\dfrac{1}{t(1-e^{-t})}-\dfrac{1}{t^2}-\dfrac{1}{2t}$	$p\left[p+\ln\Gamma(p)-p\ln p+\dfrac{1}{2}\ln\dfrac{p}{2\pi}\right]$

№	$f(t)$	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
3.33	$\dfrac{1-e^{-\alpha t}}{t(1+e^{-t})}$	$p\ln\dfrac{\Gamma\left(\frac{p}{2}\right)\Gamma\left(\frac{\alpha+p+1}{2}\right)}{\Gamma\left(\frac{p+1}{2}\right)\Gamma\left(\frac{p+\alpha}{2}\right)}$ $\operatorname{Re}p>0,\ -\operatorname{Re}\alpha$
3.34	$\dfrac{1}{t}\left(\dfrac{1}{2}-\dfrac{1}{t}+\dfrac{1}{e^t-1}\right)$	$p\omega(p)$
3.35	$\dfrac{1}{e^t-1}-\dfrac{1}{t}+\dfrac{1}{2}$	$-p\omega'(p)$
3.36	$\dfrac{1-e^t+te^{2t}}{t(e^{2t}-1)}$	$p\left\{\ln\dfrac{\Gamma\left(1+\frac{p}{2}\right)}{\Gamma\left(\frac{1+p}{2}\right)}-\dfrac{1}{2}\psi\left(\dfrac{p}{2}\right)\right\}$
3.37	$t(1-e^{-t})^{\alpha-1},\quad \operatorname{Re}\alpha>0$	$p\mathrm{B}(p,\alpha)[\psi(p+\alpha)-\psi(p)]$
3.38	$\dfrac{1}{1+e^{-t}}\left(\dfrac{1}{2}-\dfrac{1}{t}+\dfrac{1}{e^t-1}\right)$	$p\left\{\ln\sqrt{2\pi}-\ln\mathrm{B}\left(\dfrac{p}{2},\ \dfrac{1}{2}\right)-\right.$ $\left.-\dfrac{1}{2}\psi(p)\right\}$
3.39	$\exp\{-\exp(-t)\}$	$p\gamma(p,\ 1)$
3.40	$\dfrac{(1-e^{-t})^{\nu-1}}{(1-ze^{-t})^{\mu}}$ $\operatorname{Re}\nu>0,\quad \lvert\arg(1-z)\rvert<\pi$	$p\mathrm{B}(p,\ \nu)\,{}_2F_1(\mu,\ p;\ p+\nu;\ z)$
3.41	$\dfrac{(1-e^{-at})(1-e^{-bt})}{1-e^{-t}}$	$p[\psi(p+a)+\psi(p+b)-$ $-\psi(p+a+b)-\psi(p)]$ $\operatorname{Re}p>0,\ -\operatorname{Re}a;$ $\operatorname{Re}p>-\operatorname{Re}b,\ -\operatorname{Re}(a+b)$
3.42	$\dfrac{(1-e^{-at})(1-e^{-bt})}{t(1-e^{-t})}$	$p\ln\dfrac{\Gamma(p)\,\Gamma(p+a+b)}{\Gamma(p+a)\,\Gamma(p+b)}$ $\operatorname{Re}p>0,\ -\operatorname{Re}a;$ $\operatorname{Re}p>-\operatorname{Re}b,\ -\operatorname{Re}(a+b)$

№	$f(t)$	$\bar f(p) = p\int_0^\infty e^{-pt} f(t)\,dt$
3.43	$\dfrac{(1-e^{-at})(1-e^{-bt})(1-e^{-ct})}{t(1-e^{-t})}$	$p\ln\dfrac{\Gamma(p)\,\Gamma(p+b+c)}{\Gamma(p+a)\,\Gamma(p+b)}\times$ $\times\dfrac{\Gamma(p+a+c)\,\Gamma(p+a+b)}{\Gamma(p+c)\,\Gamma(p+a+b+c)}$ $2\operatorname{Re}p > \lvert\operatorname{Re}a\rvert+\lvert\operatorname{Re}b\rvert+\lvert\operatorname{Re}c\rvert$
3.44	$\dfrac{(a+\sqrt{1-e^{-t}})^{-\nu}+(a-\sqrt{1-e^{-t}})^{-\nu}}{\sqrt{1-e^{-t}}}$	$\dfrac{1}{\Gamma(\nu)}\,2^{p+1}\,p\Gamma(p)\,(a^2-1)^{\frac{p-\nu}{2}}\times$ $\times\exp[(p-\nu)\pi i]\,Q_{p-1}^{\nu-p}(a)$
3.45	0 при $0<t<a$ $\dfrac{[e^{-a}\sqrt{1-e^{-2t}}-e^{-t}\sqrt{1-e^{-2a}}]^{\nu}}{\sqrt{1-e^{-2t}}}$ при $t>a$, $\operatorname{Re}\nu>-1$	$\dfrac{\sqrt{\pi}\,p\Gamma(p)\,\Gamma(\nu+1)}{2^{\frac{p+\nu}{2}}\,\Gamma\left(\dfrac{p+\nu+1}{2}\right)}\times$ $\times\exp\left\{-\dfrac{a}{2}(p+\nu)\right\}\times$ $\times P_{-\frac{p-\nu}{2}}^{-\frac{p+\nu}{2}}(\sqrt{1-e^{-2a}})$
3.46	$e^{(\mu-1)t}(1-e^{-t})^{\mu-\frac{1}{2}}\times$ $\times[(1-e^{-t})\sin\theta-$ $-i(1-e^{-t})\cos\theta]^{\mu-\frac{1}{2}}$ $\operatorname{Re}\mu>-\dfrac{1}{2}$	$\dfrac{2^{\mu-1}\Gamma\left(\mu+\frac{1}{2}\right)p\Gamma(p-\mu+1)}{\sqrt{\pi}\,\Gamma(p+\mu+1)}\times$ $\times\sin^{\mu}\theta\exp\left\{\left(p+\dfrac{1}{2}\right)i\theta+\right.$ $\left.+\left(\dfrac{1}{2}\mu-\dfrac{1}{4}\right)\pi i\right\}\times$ $\times[\pi P_{\nu}^{\mu}(\cos\theta)+2iQ_{\nu}^{\mu}(\cos\theta)]$ $\operatorname{Re}p>\operatorname{Re}\mu-1$
3.47	0 при $t>\alpha$ $\dfrac{e^{-at}}{\sqrt{\pi t}}$ при $t<\alpha$	$\dfrac{p\operatorname{erf}(\sqrt{\alpha(p+a)})}{\sqrt{p+a}}$
3.48	$\exp\left(-\dfrac{t^2}{4}\right)$	$\sqrt{\pi}\,pe^{p^2}\operatorname{erfc}(p)$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
3.49	0 при $t<\alpha$ $\dfrac{e^{-at}}{\sqrt{\pi t}}$ при $t>\alpha$	$\dfrac{p}{\sqrt{p+a}}\operatorname{erfc}\left[\sqrt{\alpha(p+a)}\right]$
3.50	0 при $0<t<a$ $\exp\left(-\dfrac{t^2}{4\alpha}\right)$ при $t>a$ $\operatorname{Re}\alpha>0$	$\sqrt{\pi\alpha}\,pe^{\alpha p^2}\operatorname{erfc}\left(\sqrt{\alpha}p+\dfrac{a}{2\sqrt{\alpha}}\right)$
3.51	$t\exp\left\{-\dfrac{t^2}{4\alpha}\right\}$, $\operatorname{Re}\alpha>0$	$2\alpha p-2\sqrt{\pi\alpha}\,\alpha p^2e^{\alpha p^2}\operatorname{erfc}(\sqrt{\alpha}\,p)$
3.52	$\dfrac{\exp\left\{-\dfrac{t^2}{4a}\right\}}{\sqrt{t}}$, $\operatorname{Re}a>0$	$\sqrt{ap}\,p\exp\left(\dfrac{a}{2}p^2\right)K_{\frac{1}{4}}\left(\dfrac{ap^2}{2}\right)$
3.53	$\chi(t,\alpha)$	$pe^{\alpha p^2}\operatorname{erfc}(\sqrt{\alpha}p)$
3.54	$\psi(t,a)$	$\dfrac{p}{\sqrt{\pi a}}-p^2e^{ap^2}\operatorname{erfc}(\sqrt{a}p)$
3.55	$t^{\nu-1}\exp\left(-\dfrac{t^2}{8a}\right)$ $\operatorname{Re}a>0$, $\operatorname{Re}\nu>0$	$\Gamma(\nu)\,2^{\nu}a^{\frac{\nu}{2}}pe^{ap^2}D_{-\nu}(2\sqrt{a}\,p)$
3.56	$\exp\left(-\dfrac{\alpha}{4t}\right)$, $\operatorname{Re}\alpha\geqslant 0$	$\sqrt{\alpha p}\,K_1(\sqrt{\alpha p})$
3.57	$\dfrac{\exp\left(-\dfrac{\alpha}{4t}\right)}{\sqrt{t}}$, $\operatorname{Re}\alpha\geqslant 0$	$\sqrt{\pi p}\exp(-\sqrt{\alpha p})$
3.58	$\sqrt{t}\exp\left(-\dfrac{\alpha}{4t}\right)$, $\operatorname{Re}\alpha\geqslant 0$	$\dfrac{1}{2}\sqrt{\dfrac{\pi}{p}}\,(1+\sqrt{\alpha p})\exp(-\sqrt{\alpha p})$
3.59	$\left(\dfrac{\alpha^2}{2t}-1\right)\dfrac{\chi(\alpha,t)}{t}$, $\operatorname{Re}\alpha>0$	$2p\sqrt{p}\,e^{-\alpha\sqrt{p}}$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt} f(t)\,dt$
3.60	$\left(\frac{\alpha^4}{4t^2}-\frac{3\alpha^2}{2t}+3\right)\frac{\chi(\alpha, t)}{t^2}$, $\operatorname{Re}\alpha>0$	$4p^{\frac{5}{2}} e^{-\alpha\sqrt{p}}$
3.61	$\frac{\exp\left(-\frac{\alpha}{4t}\right)}{t\sqrt{t}}$, $\operatorname{Re}\alpha>0$	$2\sqrt{\frac{\pi}{\alpha}}\,p\exp(-\sqrt{\alpha p})$
3.62	$t^{\nu-1}\exp\left(-\frac{\alpha}{4t}\right)$, $\operatorname{Re}\alpha>0$	$2\left(\frac{\alpha}{4}\right)^{\frac{\nu}{2}} p^{1-\frac{\nu}{2}} K_\nu(\sqrt{\alpha p})$
3.63	$\exp\left(-at-\frac{\alpha}{4t}\right)$	$\sqrt{\alpha}\,p\,\frac{K_1[\sqrt{\alpha(p+a)}]}{\sqrt{p+a}}$
3.64	$\frac{1}{t^2}\exp\left(-at-\frac{\alpha}{4t}\right)$	$\frac{4}{\sqrt{\alpha}}\,p\sqrt{p+a}\,K_1[\sqrt{\alpha(p+a)}]$
3.65	0 при $0<t<\alpha$ $\frac{1}{\alpha}e^{-at}\sqrt{t^2-\alpha^2}$ при $t>\alpha$	$\frac{p}{p+a}K_1[\alpha(p+a)]$
3.66	$\frac{\exp\left(-\frac{\alpha}{4t}\right)-1}{\sqrt{t}}$, $\operatorname{Re}\alpha\geqslant 0$	$\sqrt{\pi p}\,[\exp(-\sqrt{\alpha p})-1]$
3.67	$\frac{\exp[-a(t+\alpha^2)]}{\sqrt{t(t+2\alpha^2)}}$	$p\exp(\alpha^2 p)\,K_0[\alpha^2(p+a)]$
3.68	$\frac{(t+\alpha^2)\exp[-a(t+\alpha^2)]}{\alpha^2\sqrt{t(t+2\alpha^2)}}$, $\operatorname{Im}\alpha=0$	$p\exp(\alpha^2 p)\,K_1[\alpha^2(p+a)]$
3.69	$\frac{\sqrt{t(t+2\alpha^2)}}{\alpha^2}\exp[-a(t+\alpha^2)]$ $\operatorname{Im}\alpha=0$	$\frac{p}{p+a}\exp(\alpha^2 p)\,K_1[\alpha^2(p+a)]$
3.70	$\frac{\exp[-a(t+\alpha^2)]}{\sqrt[4]{[t(t+2\alpha^2)]^3}}$, $\operatorname{Im}\alpha=0$	$\frac{\Gamma\left(\frac{1}{4}\right)}{2^{\frac{1}{4}}(\pi\alpha)^{\frac{1}{2}}}\,p\sqrt[4]{p+a}\exp(\alpha^2 p)\times$ $\times K_{\frac{1}{4}}[\alpha^2(p+a)]$

№.	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
3.71	$\exp(-2\sqrt{\alpha t}),\quad \lvert\arg\alpha\rvert<\pi$	$1-\sqrt{\frac{\pi\alpha}{p}}\exp\left(\frac{\alpha}{p}\right)\times$ $\times\operatorname{erfc}\left(\sqrt{\frac{\alpha}{p}}\right)$
3.72	$\sqrt{t}\exp(-2\sqrt{\alpha t}),\quad \lvert\arg\alpha\rvert<\pi$	$\sqrt{\pi}\,p^{-\frac{3}{2}}\left(\alpha+\frac{p}{2}\right)\exp\left(\frac{\alpha}{p}\right)\times$ $\times\operatorname{erfc}\left(\sqrt{\frac{\alpha}{p}}\right)-\frac{\sqrt{\alpha}}{p}$
3.73	$\frac{\exp(-2\sqrt{\alpha t})}{\sqrt{t}},\quad \lvert\arg\alpha\rvert<\pi$	$\sqrt{\pi p}\,e^{\frac{\alpha}{p}}\operatorname{erfc}\left(\sqrt{\frac{\alpha}{p}}\right)$
3.74	$\frac{\exp(2\sqrt{t})}{\sqrt{t}}$	$\sqrt{\pi p}\,e^{\frac{1}{p}}\operatorname{erfc}\left(-\frac{1}{\sqrt{p}}\right)$
3.75	$1-e^{-\sqrt{t}}$	$\frac{\sqrt{\pi}}{2}\frac{1}{\sqrt{p}}\exp\left(\frac{1}{4p}\right)\operatorname{erfc}\left(\frac{1}{2\sqrt{p}}\right)$
3.76	$e^{\sqrt{t}}-1$	$\frac{\sqrt{\pi}}{2}\frac{1}{\sqrt{p}}\exp\left(\frac{1}{4p}\right)\operatorname{erfc}\left(-\frac{1}{2\sqrt{p}}\right)$
3.77	$\frac{\exp(-at-2\sqrt{t})}{\sqrt{t}}$	$\frac{p}{\sqrt{p+a}}\exp\left(\frac{1}{p+a}\right)\operatorname{erfc}\left(\frac{1}{\sqrt{p+a}}\right)$
3.78	$\exp(-at-2\sqrt{t})$	$\frac{p}{p+a}-\sqrt{\pi}\frac{p}{\sqrt{(p+a)^3}}\times$ $\times\exp\left(\frac{1}{p+a}\right)\operatorname{erfc}\left(\frac{1}{\sqrt{p+a}}\right)$
3.79	$\sqrt{t}\exp(-at-2\sqrt{t})$	$\sqrt{\pi}\,p\left\{\left[\frac{1}{\sqrt{(p+a)^5}}+\right.\right.$ $\left.+\frac{1}{2\sqrt{(p+a)^3}}\right]\exp\left(\frac{1}{p+a}\right)\times$ $\left.\times\operatorname{erfc}\left(\frac{1}{\sqrt{p+a}}\right)-\frac{1}{\sqrt{\pi}}\frac{1}{(p+a)^2}\right\}$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
3.80	$(2t)^{-\frac{3}{4}}\exp(-2\sqrt{\alpha t}),\quad \lvert\arg\alpha\rvert<\pi$	$\sqrt{\frac{\alpha}{2}}\,p^{\frac{1}{2}}\exp\left(\frac{\alpha}{2p}\right)K_{\frac{1}{4}}\left(\frac{\alpha}{2p}\right)$
3.81	$(2t)^{\nu-1}\exp(-2\sqrt{\alpha t}),\quad \operatorname{Re}\nu>0$	$\Gamma(2\nu)\,p^{1-\nu}\exp\left(\frac{\alpha}{2p}\right)\times$ $\times D_{-2\nu}\left(\sqrt{\frac{2\alpha}{p}}\right)$
3.82	$\exp[-\alpha\exp(-t)]$	$\alpha^{-p}p\gamma(p,\alpha)$
3.83	$\exp[-\alpha\exp(t)],\quad \operatorname{Re}\alpha>0$	$\alpha^{p}p\Gamma(-p,\alpha)$
3.84	$\exp[-\exp(t)]$ при $\ln\alpha<t<\ln\beta$ 0 в остальных случаях $1\leqslant\alpha<\beta$	$p[\gamma(-p,\beta)-\gamma(-p,\alpha)]$
3.85	$t^{\nu-1}e^{-at}$ при $t<\alpha$ 0 при $t>\alpha$, $\operatorname{Re}\nu>0$	$\frac{p\gamma[\nu,\ \alpha(p+a)]}{(p+a)^{\nu}}$
3.86	$\frac{e^{-at}(t-\alpha)^{\nu-1}}{\Gamma(\nu)\,\alpha^{\nu-1}t}$ при $t>\alpha$ 0 при $t<\alpha$ $\operatorname{Re}\nu>0$	$p\Gamma[1-\nu,\ \alpha(p+a)]$
3.87	$t^{\nu-1}e^{-at}$ при $t>\alpha$ 0 при $t<\alpha$, $\operatorname{Re}\nu>0$	$\frac{p}{(p+a)^{\nu}}\Gamma[\nu,\ \alpha(p+a)]$
3.88	$\frac{t^{\nu-1}\exp[-a(t+\alpha^2)]}{t+\alpha^2}$ $\operatorname{Re}\alpha>0,\quad \operatorname{Re}\nu>0$	$\alpha^{2\nu-2}\Gamma(\nu)\,p\exp(\alpha^2 p)\times$ $\times\Gamma[1-\nu,\ \alpha^2(p+a)]$
3.89	$(t+\alpha^2)^{\nu-1}\exp[-a(t+\alpha^2)]$ $\operatorname{Re}\alpha>0$	$\frac{p}{(p+a)^{\nu}}\exp(\alpha^2 p)\,\Gamma[\nu,\ \alpha^2(p+a)]$
3.90	$\exp[-\exp(t)]$	$pQ(1,\ -p)$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt} f(t)\, dt$
3.91	$\frac{d^n}{dt^n}\left(e^{-\frac{t^2}{2}} \frac{t^n}{n!}\right)$	$p^{n+1} e^{\frac{p^2}{4}} D_{-n-1}(p)$
3.92	$(1-e^{-t})^{\nu-1} \exp(ae^{-t})$ $\operatorname{Re} \nu > 0$	$\frac{\Gamma(\nu)\Gamma(p)p}{\Gamma(\nu+p)} a^{-\frac{\nu+p}{2}} e^{\frac{a}{2}} \times$ $\times M_{\frac{\nu}{2}-\frac{p}{2},\ \frac{\nu}{2}+\frac{p}{2}-\frac{1}{2}}(a)$
3.93	$\frac{(1-e^{-t})^{\nu-1}}{(1-\lambda e^{-t})^{\mu}} \exp(ae^{-t})$ $\operatorname{Re} \nu > 0, \quad \lvert\arg(1-\lambda)\rvert < \pi$	$\frac{\Gamma(\nu)\Gamma(p)}{\Gamma(\nu+p)} p\Phi_1(p, \mu, \nu; \lambda, a)$
3.94	$(e^t-1)^{\nu-1} \exp\left[-\frac{\alpha}{e^t-1}\right], \quad \operatorname{Re} \alpha > 0$	$p\Gamma(p-\nu+1) e^{\frac{\alpha}{2}} a^{\frac{\nu-1}{2}} \times$ $\times W_{\frac{\nu}{2}-\frac{1}{2}-p,\ \frac{\nu}{2}}(a)$ $\operatorname{Re} p > \operatorname{Re} \nu - 1$

§ 4. Логарифмические функции

4.1	$\ln t$	$-\ln(\gamma p)$
4.2	0 при $0 < t < a$ $\ln t$ при $t > a$	$e^{-ap} \ln a - \operatorname{Ei}(-ap)$
4.3	0 при $0 < t < a$ $\ln \frac{t}{a}$ при $t > a$	$-\operatorname{Ei}(-ap)$
4.4	$\ln(t+\alpha), \quad \lvert\arg \alpha\rvert < \pi$	$\ln \alpha - e^{\alpha p} \operatorname{Ei}(-\alpha p)$
4.5	$\ln \lvert\alpha - t\rvert, \quad \alpha > 0$	$\ln \alpha - e^{-\alpha p} \overline{\operatorname{Ei}}(\alpha p)$
4.6	$t[1+\Gamma'(1) - \ln t]$	$\frac{\ln p}{p}$

№	$f(t)$	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
4.7	$\frac{t^{\nu-1}}{\Gamma(\nu)}[\psi(\nu)-\ln t],\quad \mathrm{Re}\,\nu>0$	$\frac{\ln p}{p^{\nu-1}}$
4.8	$\frac{\psi(\nu)-\ln t}{\Gamma(\nu)}t^{\nu-1}e^{-at},\quad \mathrm{Re}\,\nu>0$	$\frac{p\ln(p+a)}{(p+a)^\nu}$
4.9	$\frac{\psi(\nu)-\ln t}{\Gamma(\nu)}t^{\nu-1}(e^{-bt}-e^{-at})$ $\mathrm{Re}\,\nu>0$	$p\left[\frac{\ln(p+b)}{(p+b)^\nu}-\frac{\ln(p+a)}{(p+a)^\nu}\right]$
4.10	$t^n\ln t$	$\frac{n!}{p^n}\left[1+\frac{1}{2}+\frac{1}{3}+\ldots+\frac{1}{n}-\ln(\gamma p)\right]$
4.11	0 при $0<t<1$; $\frac{\ln(2t-1)}{t}$ при $t>1$	$\frac{p}{2}\left[\mathrm{Ei}\left(-\frac{p}{2}\right)\right]^2$
4.12	$\frac{\ln t}{\sqrt{t}}$	$-\sqrt{\pi p}\ln(4\gamma p)$
4.13	$t^{n-\frac{1}{2}}\ln t,\quad n\geqslant 1$	$\sqrt{\pi}\,\frac{1\cdot 3\cdot 5\ldots(2n-1)}{2^n p^{n-\frac{1}{2}}}\times$ $\times\left[2\left(1+\frac{1}{3}+\frac{1}{5}+\ldots+\frac{1}{2n-1}\right)-\right.$ $\left.-\ln(4\gamma p)\right]$
4.14	$t^{\nu-1}\ln t,\quad \mathrm{Re}\,\nu>0$	$\frac{\Gamma(\nu)}{p^{\nu-1}}[\psi(\nu)-\ln p]$
4.15	$t^{\nu-1}[\psi(\nu)-\ln t],\quad \mathrm{Re}\,\nu>0$	$\frac{\Gamma(\nu)}{p^{\nu-1}}\ln p$
4.16	$(\ln t)^2$	$\frac{\pi^2}{6}+[\ln(\gamma p)]^2$
4.17	$\ln\lvert t^2-a^2\rvert,\quad a>0$	$\ln a^2-e^{ap}\,\mathrm{Ei}(-ap)-e^{-ap}\,\overline{\mathrm{Ei}}(ap)$
4.18	$\ln(t^2-a^2),\quad \lvert\mathrm{Im}\,a\rvert>0$	$\ln a^2-e^{ap}\,\mathrm{Ei}(-ap)-e^{-ap}\,\mathrm{Ei}(ap)$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
4.19	$\ln(t^2+a^2)$	$2[\ln a-\operatorname{ci}(ap)\cos(ap)-$ $-\operatorname{si}(ap)\sin(ap)]$
4.20	$\dfrac{\ln(t^2+a^2)-\ln a^2}{t}$	$p[\operatorname{ci}(ap)]^2+p[\operatorname{si}(ap)]^2$
4.21	$\ln\dfrac{\sqrt{t}+\sqrt{t+2a}}{\sqrt{2a}},\quad \lvert\arg a\rvert<\pi$	$\dfrac{1}{2}e^{ap}K_0(ap)$
4.22	0 при $0<t<a$ $\ln\dfrac{\sqrt{t+a}+\sqrt{t-a}}{\sqrt{2a}}$ при $t>a$	$\dfrac{1}{2}K_0(ap)$
4.23	$\dfrac{\ln\lvert 1-t^2\rvert}{t}$	$p\,\overline{\operatorname{Ei}}(p)\operatorname{Ei}(-p)$
4.24	$\ln\sqrt{1+t^2}$	$-\cos p\operatorname{ci}(p)-\sin p\operatorname{si}(p)$
4.25	$\ln\dfrac{\sqrt{t+ia}+\sqrt{t-ia}}{\sqrt{2a}},\quad a>0$	$\dfrac{\pi}{4}[\mathbf{H}_0(ap)-Y_0(ap)]$
4.26	$\dfrac{\ln\left[4t\left(\dfrac{2a-t}{a^2}\right)\right]}{\sqrt{t(2a-t)}}$ при $0<t<2a$ 0 при $t>2a$	$\pi pe^{-ap}\times$ $\times\left[\dfrac{\pi}{2}Y_0(iap)-\ln\left(\dfrac{\gamma}{2}\right)J_0(iap)\right]$
4.27	0 при $t<\alpha$ $\dfrac{\ln t}{\alpha+t}$ при $t>\alpha,\ \alpha>0$	$pe^{\alpha p}[\operatorname{Ei}^2(-\alpha p)-\ln\alpha^2\operatorname{Ei}(-2\alpha p)]$
4.28	0 при $t<\alpha$ $\dfrac{\ln t-\ln\alpha}{t+\alpha}$ при $t>\alpha,\quad \alpha>0$	$pe^{\alpha p}[\operatorname{Ei}(-\alpha p)]^2$
4.29	$\ln\alpha$ при $t<\alpha$ $\ln t$ при $t>\alpha,\ \alpha>0$	$-\operatorname{Ei}(-\alpha p)+\ln\alpha$

№	$f(t)$	$\bar{f}(p) = p\int_0^\infty e^{-pt} f(t)\,dt$
4.30	$\ln\frac{t}{\alpha}$ при $t < \alpha$ 0 при $t > \alpha,\quad \alpha > 0$	$\mathrm{Ei}(-\alpha p) - \ln \alpha p - C$
4.31	$\ln\dfrac{2\,\mathrm{sh}\,\frac{t}{2}}{t}$	$-\omega'(p)$
4.32	$\psi(1) - \ln(e^{at} - 1)$	$\psi\left(\frac{p}{a}\right)$

§ 5. Тригонометрические функции

5.1	$\sin(at)$	$\dfrac{ap}{p^2 + a^2}$
5.2	$\cos(at)$	$\dfrac{p^2}{p^2 + a^2}$
5.3	$\lvert\sin(at)\rvert,\quad a > 0$	$\dfrac{ap}{p^2 + a^2}\,\mathrm{cth}\,\dfrac{\pi p}{2a}$
5.4	$\lvert\cos(at)\rvert,\quad a > 0$	$\dfrac{p}{p^2 + a^2}\left[p + a\,\mathrm{csch}\,\dfrac{\pi p}{2a}\right]$
5.5	$\sin^{2n}(at)$	$\dfrac{(2n)!\,a^{2n}}{[p^2 + (2a)^2][p^2 + (4a)^2]\ldots[p^2 + (2na)^2]}$ $\mathrm{Re}\,p > 2n\,\lvert\mathrm{Im}\,a\rvert$
5.6	$\cos^{2n}(at)$	$\dfrac{(2n)!\,a^{2n}}{[p^2 + (2a)^2][p^2 + (4a)^2]\ldots[p^2 + (2na)^2]} \times$ $\times\left\{1 + \dfrac{p^2}{2!\,a^2} + \dfrac{p^2[p^2 + (2a)^2]}{4!\,a^4} + \ldots\right.$ $\left.\ldots + \dfrac{p^2(p^2 + 4a^2)\ldots[p^2 + 4(na - a)^2]}{(2n)!\,a^{2n}}\right\}$ $\mathrm{Re}\,p > 2n\,\lvert\mathrm{Im}\,a\rvert$

№	$f(t)$	$\bar{f}(p) = p\int_0^\infty e^{-pt} f(t)\,dt$
5.7	$\sin^{2n+1}(at)$	$\frac{p(2n+1)!\,a^{2n+1}}{(p^2+a^2)}\times$ $\times\frac{1}{[p^2+(3a)^2]\ldots\{p^2+[(2n+1)a]^2\}}$ $\operatorname{Re} p > (2n+1)\,|\operatorname{Im} a|$
5.8	$\cos^{2n+1}(at)$	$\frac{(2n+1)!\,a^{2n}p^2}{(p^2+a^2)}\times$ $\times\frac{1}{[p^2+(3a)^2]\ldots[p^2+(2na+a)^2]}\times$ $\times\left\{1+\frac{p^2+a^2}{3!\,a^2}+\frac{(p^2+a^2)(p^2+9a^2)}{5!\,a^4}+\ldots\right.$ $\ldots+\frac{(p^2+a^2)}{(2n+1)!\,a^{2n}}\times$ $\left.\times[p^2+(3a)^2]\ldots[p^2+(2na-a)^2]\right\}$ $\operatorname{Re} p > (2n+1)\,|\operatorname{Im} a|$
5.9	$t^{\nu-1}\sin(at),\quad \operatorname{Re}\nu > -1$	$\frac{i\Gamma(\nu)}{2}\,p\,[(p+ia)^{-\nu}-(p-ia)^{-\nu}]$
5.10	$t^{\nu-1}\cos(at),\quad \operatorname{Re}\nu > 0$	$\frac{\Gamma(\nu)}{2}\,p\,[(p-ia)^{-\nu}+(p+ia)^{-\nu}]$
5.11	$(1-e^{-t})^{\nu-1}\sin(at),\quad \operatorname{Re}\nu > -1$	$\frac{ip}{2}\,\mathrm{B}(\nu,\ p+ia)-\frac{ip}{2}\,\mathrm{B}(\nu,\ p-ia)$
5.12	$(1-e^{-t})^{\nu-1}\cos(at),\quad \operatorname{Re}\nu > 0$	$\frac{p}{2}\,\mathrm{B}(\nu,\ p-ia)+\frac{p}{2}\,\mathrm{B}(\nu,\ p+ia)$
5.13	$t^{\nu-1}e^{-\frac{t^2}{2a}}\sin(bt),\quad \operatorname{Re} a > 0$ $\operatorname{Re}\nu > -1$	$\frac{ip}{2}\,\Gamma(\nu)\,a^{\frac{\nu}{2}}\,e^{\frac{a(p^2-b^2)}{4}}\times$ $\times\{e^{\frac{ab}{2}ip}D_{-\nu}[\sqrt{a}(p+ib)]-$ $-e^{-\frac{ab}{2}ip}D_{-\nu}[\sqrt{a}(p-ib)]\}$

№	$f(t)$	$\bar f(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
5.14	$t^{\nu-1}e^{-\frac{t^2}{2a}}\cos(bt)$, $\operatorname{Re}a>0$, $\operatorname{Re}\nu>0$	$\frac{\Gamma(\nu)a^{\frac{\nu}{2}}}{2}pe^{\frac{a}{4}(p^2-b^2)}\times\{e^{-\frac{ab}{2}ip}D_{-\nu}[\sqrt{a}(p-ib)]+e^{\frac{ab}{2}ip}D_{-\nu}[\sqrt{a}(p+ib)]\}$
5.15	$t^{\nu-1}\ln t\sin(at)$, $\operatorname{Re}\nu>-1$	$\Gamma(\nu)p(p^2+a^2)^{-\frac{\nu}{2}}\times\sin\left[\nu\operatorname{arctg}\left(\frac{a}{p}\right)\right]\left\{\psi(\nu)-\ln\sqrt{p^2+a^2}+\operatorname{arctg}\left(\frac{a}{p}\right)\times\operatorname{ctg}\left[\nu\operatorname{arctg}\left(\frac{a}{p}\right)\right]\right\}$
5.16	$t^{\nu-1}\ln t\cos(at)$, $\operatorname{Re}\nu>0$	$\frac{\Gamma(\nu)p}{(p^2+a^2)^{\frac{\nu}{2}}}\cos\left[\nu\operatorname{arctg}\left(\frac{a}{p}\right)\right]\times\left\{\psi(\nu)-\ln\sqrt{p^2+a^2}-\operatorname{arctg}\left(\frac{a}{p}\right)\operatorname{tg}\left[\nu\operatorname{arctg}\left(\frac{a}{p}\right)\right]\right\}$
5.17	$t^{\nu-1}\sin(\sqrt{2at})$, $\operatorname{Re}\nu>-\frac{1}{2}$	$2^{-\nu-\frac{1}{2}}\sqrt{\pi}\sec(\pi\nu)p^{1-\nu}e^{-\frac{a}{4p}}\times\left[D_{2\nu-1}\left(-\sqrt{\frac{a}{p}}\right)-D_{2\nu-1}\left(\sqrt{\frac{a}{p}}\right)\right]$
5.18	$t^{\nu-1}\cos(\sqrt{2at})$, $\operatorname{Re}\nu>0$	$2^{-\nu-\frac{1}{2}}\sqrt{\pi}\operatorname{cosec}(\pi\nu)p^{1-\nu}e^{-\frac{a}{4p}}\times\left[D_{2\nu-1}\left(\sqrt{\frac{a}{p}}\right)+D_{2\nu-1}\left(-\sqrt{\frac{a}{p}}\right)\right]$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
5.19	0 при $0<t<b$ $\sin[a\sqrt{t^2-b^2}]$ при $t>b$	$abK_1(bp)$
5.20	$\sin(ae^{-t})$	$pa^{-p}\Gamma(p)[U_p(2a,\,0)\sin a-$ $-U_{p+1}(2a,\,0)\cos a]$
5.21	$\cos(ae^{-t})$	$pa^{-p}\Gamma(p)[U_p(2a,\,0)\cos a+$ $+U_{p+1}(2a,\,0)\sin a]$
5.22	$\sin[a(1-e^{-t})]$	$pa^{-p}\Gamma(p)U_{p+1}(2a,\,0)$
5.23	$\cos[a(1-e^{-t})]$	$pa^{-p}\Gamma(p)U_p(2a,\,0)$
5.24	$\dfrac{\sin[a\sqrt{1-e^{-t}}]}{\sqrt{e^t-1}}$	$\sqrt{\pi}p\Gamma\left(p+\frac{1}{2}\right)\left(\frac{2}{a}\right)^p\mathbf{H}_p(a)$ $\operatorname{Re}p>-\frac{1}{2}$
5.25	$\dfrac{\cos[a\sqrt{1-e^{-t}}]}{\sqrt{e^t-1}}$	$\sqrt{\pi}p\Gamma\left(p+\frac{1}{2}\right)\left(\frac{2}{a}\right)^pJ_p(a)$ $\operatorname{Re}p>-\frac{1}{2}$
5.26	$\dfrac{\sin(a\sqrt{e^t-1})}{\sqrt{1-e^{-t}}},\quad a>0$	$\sqrt{\pi}p\Gamma\left(\frac{1}{2}-p\right)\left(\frac{a}{2}\right)^p\times$ $\times[I_p(a)-\mathbf{L}_{-p}(a)],\quad \operatorname{Re}p>-\frac{1}{2}$
5.27	$\dfrac{\cos(a\sqrt{e^t-1})}{\sqrt{1-e^{-t}}},\quad a>0$	$\dfrac{2\sqrt{\pi}\,p}{\Gamma\left(p+\frac{1}{2}\right)}\left(\frac{a}{2}\right)^pK_p(a)$ $\operatorname{Re}p>-\frac{1}{2}$
5.28	$\sin(at)\sin(bt)$	$\dfrac{2ab\,p^2}{[p^2+(a+b)^2][p^2+(a-b)^2]}$
5.29	$\cos(at)\cos(bt)$	$\dfrac{p^2(p^2+a^2+b^2)}{[p^2+(a+b)^2][p^2+(a-b)^2]}$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
5.30	$\cos(at)\sin(bt)$	$\dfrac{bp\,(p^2-a^2+b^2)}{[p^2+(a+b)^2]\,[p^2+(a-b)^2]}$
5.31	$\dfrac{\sin[(2n+1)\,t]}{\sin t}$	$1+\sum\limits_{m=1}^{n}\dfrac{2p^2}{p^2+4m^2}$
5.32	$\operatorname{tg}(t)\cos[(2n+1)\,t]$	$(2n+1)\dfrac{p}{p^2+(2n+1)^2}+$ $+2p\sum\limits_{m=0}^{n-1}\dfrac{(-1)^m(2m+1)}{p^2+(2m+1)^2}$
5.33	$\dfrac{(2at\cos at-\sin at)\sin at}{t^2}$	$\dfrac{p^2}{4}\ln\left(1+\dfrac{4a^2}{p^2}\right)$
5.34	$\dfrac{at\cos at-\sin at}{t^2}$	$p^2\operatorname{arctg}\dfrac{a}{p}-ap$
5.35	0 при $0<t<\dfrac{\pi}{2}$ $\sin^{2n}t$ при $t>\dfrac{\pi}{2}$	$\dfrac{(2n)!\,e^{-\frac{\pi p}{2}}}{(2^2+p^2)(4^2+p^2)\ldots(4n^2+p^2)}\times$ $\times\left\{1+\dfrac{p^2}{2!}+\dfrac{p^2(2^2+p^2)}{4!}+\ldots\right.$ $\left.\ldots+\dfrac{p^2(2^2+p^2)\ldots[4(n-1)^2+p^2]}{(2n)!}\right\}$
5.36	0 при $0<t<\dfrac{\pi}{2}$ $\cos^{2n}t$ при $t>\dfrac{\pi}{2}$	$\dfrac{(2n)!\,e^{-\frac{\pi p}{2}}}{(2^2+p^2)(4^2+p^2)\ldots(4n^2+p^2)}$
5.37	$\sin^{2n}t$ при $0<t<\dfrac{\pi}{2}$ 0 при $t>\dfrac{\pi}{2}$	$\dfrac{(2n)!\,e^{-\frac{\pi p}{2}}}{(2^2+p^2)(4^2+p^2)\ldots(4n^2+p^2)}\times$ $\times\left\{e^{\frac{\pi p}{2}}-1-\dfrac{p^2}{2!}-\ldots\right.$ $\left.\ldots-\dfrac{p^2(2^2+p^2)\ldots[4(n-1)^2+p^2]}{(2n)!}\right\}$

№	$f(t)$	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
5.38	$\cos^{2n}t$ при $0<t<\frac{\pi}{2}$ 0 при $t>\frac{\pi}{2}$	$\frac{(2n)!}{(2^2+p^2)(4^2+p^2)\ldots(4n^2+p^2)}\times$ $\times\left\{-e^{-\frac{\pi p}{2}}+1+\frac{p^2}{2!}+\ldots\right.$ $\left.\ldots+\frac{p^2(2^2+p^2)\ldots[4(n-1)^2+p^2]}{(2n)!}\right\}$
5.39	$\sin^{2n}t$ при $0<t<m\pi$ 0 при $t>m\pi$, $m=1, 2, 3, \ldots$	$\frac{(2n)!\,(1-e^{-m\pi p})}{(2^2+p^2)(4^2+p^2)\ldots(4n^2+p^2)}$
5.40	0 при $0<t<\frac{\pi}{2}$ $\cos^{2n}t$ при $\frac{\pi}{2}<t<\left(m+\frac{1}{2}\right)\pi$ 0 при $t>\left(m+\frac{1}{2}\right)\pi$, $m=1, 2, 3, \ldots$	$\frac{(2n)!\,e^{-\frac{\pi p}{2}}(1-e^{-m\pi p})}{(2^2+p^2)(4^2+p^2)\ldots(4n^2+p^2)}$
5.41	0 при $0<t<\frac{\pi}{2}$ $\sin^{2n+1}t$ при $t>\frac{\pi}{2}$	$\frac{(2n+1)!\,p^2e^{-\frac{\pi p}{2}}}{(1^2+p^2)(3^2+p^2)\ldots[(2n+1)^2+p^2]}\times$ $\times\left\{1+\frac{1^2+p^2}{3!}+\frac{(1^2+p^2)(3^2+p^2)}{5!}+\ldots\right.$ $\ldots+(1^2+p^2)(3^2+p^2)\times$ $\left.\times\frac{(5^2+p^2)\ldots[(2n-1)^2+p^2]}{(2n+1)!}\right\}$
5.42	0 при $0<t<\frac{\pi}{2}$ $\cos^{2n+1}t$ при $t>\frac{\pi}{2}$	$\frac{-(2n+1)!\,pe^{-\frac{\pi p}{2}}}{(1^2+p^2)(3^2+p^2)\ldots[(2n+1)^2+p^2]}$

№	$f(t)$	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
5.43	$\sin^{2n+1}t$ при $0<t<\frac{\pi}{2}$ 0 при $t>\frac{\pi}{2}$	$\frac{(2n+1)!\,p^2e^{-\frac{\pi p}{2}}}{(1^2+p^2)(3^2+p^2)\ldots[(2n+1)^2+p^2]}\times$ $\times\left\{\frac{e^{\frac{\pi p}{2}}}{p}-1-\frac{1^2+p^2}{3!}-\ldots\right.$ $\ldots-(1^2+p^2)(3^2+p^2)\times$ $\left.\times\frac{(5^2+p^2)\ldots[(2n-1)^2+p^2]}{(2n+1)!}\right\}$
5.44	$\cos^{2n+1}t$ при $0<t<\frac{\pi}{2}$ 0 при $t>\frac{\pi}{2}$	$\frac{(2n+1)!\,p^2}{(1^2+p^2)(3^2+p^2)\ldots[(2n+1)^2+p^2]}\times$ $\times\left\{\frac{e^{-\frac{\pi p}{2}}}{p}+1+\frac{1^2+p^2}{3!}+\ldots\right.$ $\ldots+(1^2+p^2)(3^2+p^2)\times$ $\left.\times\frac{(5^2+p^2)\ldots[(2n-1)^2+p^2]}{(2n+1)!}\right\}$
5.45	$\sin^{2n+1}t$ при $0<t<m\pi$ 0 при $t>m\pi$, $m=1, 2, 3, \ldots$	$\frac{(2n+1)!\,p\,[1-(-1)^m e^{-m\pi p}]}{(1^2+p^2)(3^2+p^2)\ldots[(2n+1)^2+p^2]}$
5.46	0 при $0<t<\frac{\pi}{2}$ $\cos^{2n+1}t$ при $\frac{\pi}{2}<t<\left(m+\frac{1}{2}\right)\pi$ 0 при $t>\left(m+\frac{1}{2}\right)\pi$, $m=1, 2, 3, \ldots$	$\frac{(2n+1)!\,pe^{-\frac{\pi p}{2}}(e^{-m\pi(p+i}-1)}{(1^2+p^2)(3^2+p^2)\ldots[(2n+1)^2+p^2]}$
5.47	$\lvert\sin(at)\rvert^{2\nu}$, $a>0$, $\operatorname{Re}\nu>-\frac{1}{2}$	$\frac{\mathrm{B}\left(1+\frac{ip}{2a},\ 1-\frac{ip}{2a}\right)}{(2\nu+1)\,2^{2\nu}}\times$ $\times\frac{1}{\mathrm{B}\left(\nu+1+\frac{ip}{2a},\ \nu+1-\frac{ip}{2a}\right)}$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
5.48	0 при $0<t<\frac{\pi}{2}$ $t\sin t$ при $t>\frac{\pi}{2}$	$\frac{pe^{-\frac{\pi p}{2}}}{(1+p^2)^2}\left[\frac{\pi p}{2}(1+p^2)+p^2-1\right]$
5.49	0 при $0<t<\frac{\pi}{2}$ $t\cos t$ при $t>\frac{\pi}{2}$	$-\frac{p}{(p^2+1)^2}e^{-\frac{\pi p}{2}}\left[\frac{\pi}{2}(p^2+1)+2p\right]$
5.50	$t\sin t$ при $0<t<\frac{\pi}{2}$ 0 при $t>\frac{\pi}{2}$	$\frac{p}{(p^2+1)^2}\times$ $\times\left\{2p-e^{-\frac{\pi p}{2}}\left[\frac{\pi p}{2}(p^2+1)+p^2-1\right]\right\}$
5.51	$t\cos t$ при $0<t<\frac{\pi}{2}$ 0 при $t>\frac{\pi}{2}$	$\frac{p(p^2-1)}{(p^2+1)^2}+\frac{p}{(p^2+1)^2}\times$ $\times\exp\left(-\frac{\pi p}{2}\right)\left[\frac{\pi}{2}(p^2+1)+2p\right]$
5.52	$t^n\sin(at)$	$\frac{n!\,p^{n+2}}{(p^2+a^2)^{n+1}}\sum_{0\leqslant 2m\leqslant n}(-1)^m\times$ $\times\binom{n+1}{2m+1}\left(\frac{a}{p}\right)^{2m+1}$ $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
5.53	$t^n\cos(at)$	$\frac{n!\,p^{n+2}}{(p^2+a^2)^{n+1}}\sum_{0\leqslant 2m\leqslant n+1}(-1)^m\times$ $\times\binom{n+1}{2m}\left(\frac{a}{p}\right)^{2m}$, $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
5.54	$\frac{\sin at}{t}$	$p\operatorname{arctg}\left(\frac{a}{p}\right)$, $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$

№	$f(t)$	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
5.55	$\frac{1-\cos(at)}{t}$	$\frac{p}{2}\ln\left(1+\frac{a^2}{p^2}\right)$, $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
5.56	$\frac{\sin^2(at)}{t}$	$\frac{p}{4}\ln\left(1+\frac{4a^2}{p^2}\right)$, $\operatorname{Re}p>2\lvert\operatorname{Im}a\rvert$
5.57	$\frac{\sin^3(at)}{t}$	$\frac{p}{2}\operatorname{arctg}\left(\frac{a}{p}\right)-\frac{p}{4}\operatorname{arctg}\left(\frac{2ap}{p^2+3a^2}\right)$ $\operatorname{Re}p>3\lvert\operatorname{Im}a\rvert$
5.58	$\frac{\sin^4(at)}{t}$	$\frac{p}{8}\ln\frac{(p^2+4a^2)^2}{p^3}-\frac{p}{16}\ln(p^2+16a^2)$ $\operatorname{Re}p>4\lvert\operatorname{Im}a\rvert$
5.59	$\frac{\sin^2(at)}{t^2}$	$ap\operatorname{arctg}\left(\frac{2a}{p}\right)-\frac{p^2}{4}\ln\left(1+\frac{4a^2}{p^2}\right)$ $\operatorname{Re}p\geqslant 2\lvert\operatorname{Im}a\rvert$
5.60	$\frac{\sin^3(at)}{t^2}$	$\frac{p^2}{4}\operatorname{arctg}\left(\frac{3a}{p}\right)-\frac{3}{4}p^2\operatorname{arctg}\left(\frac{a}{p}\right)+$ $+\frac{3ap}{8}\ln\left[\frac{p^2+3a^2}{p^2+a^2}\right]$ $\operatorname{Re}p\geqslant 3\lvert\operatorname{Im}a\rvert$
5.61	$\frac{\sin(at)}{e^t-1}$	$\frac{ip}{2}\psi(p-ia+1)-\frac{ip}{2}\psi(p+ia+1)$ $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert-1$
5.62	$\frac{\sin(at)}{1-e^{-t}}$	$\frac{ip}{2}\psi(p-ia)-\frac{ip}{2}\psi(p+ia)$ $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
5.63	$\ln t\sin(at)$	$\frac{p^2\operatorname{arctg}\left(\frac{a}{p}\right)-ap\ln\left[\gamma\sqrt{p^2+a^2}\right]}{p^2+a^2}$ $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
5.64	$\ln t\cos(at)$	$-\frac{ap\operatorname{arctg}\left(\frac{a}{p}\right)+p^2\ln\left[\gamma\sqrt{p^2+a^2}\right]}{p^2+a^2}$ $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
5.65	$\ln t\sin^2\frac{at}{2}$	$\frac{ap}{p^2+a^2}\operatorname{arctg}\left(\frac{a}{p}\right)+\frac{p^2}{p^2+a^2}\times$ $\times\ln\sqrt{p^2+a^2}-\ln p-\frac{a^2}{p^2+a^2}\ln\gamma$ $\operatorname{Re}p>2\mid\operatorname{Im}a\mid$
5.66	$\frac{\ln t\sin(at)}{t}$	$-p\operatorname{arctg}\left(\frac{a}{p}\right)\ln[\gamma\sqrt{p^2+a^2}]$ $\operatorname{Re}p>\mid\operatorname{Im}a\mid$
5.67	$\frac{e^{at}\sin\alpha t}{t}$	$p\operatorname{arctg}\frac{\alpha}{p-a}$
5.68	$\frac{\sin^5\alpha t}{t}$	$\frac{p}{8}\left[5\operatorname{arctg}\frac{\alpha}{p}-\frac{5}{2}\operatorname{arctg}\frac{3\alpha}{p}+\right.$ $\left.+\frac{1}{2}\operatorname{arctg}\frac{5\alpha}{p}\right]$
5.69	$\frac{\sin at\cos bt}{t}$	$\frac{p}{2}\operatorname{arctg}\frac{2ap}{p^2-a^2+b^2}$ $\operatorname{Re}p>\mid\operatorname{Im}(\pm a\pm b)\mid$
5.70	$\frac{\cos(\alpha t)-1}{t^2}$	$p\left\{\frac{p}{2}\ln\left(1+\frac{\alpha^2}{p^2}\right)-\alpha\operatorname{arctg}\frac{\alpha}{p}\right\}$
5.71	$\sin(t^2)$	$\sqrt{\frac{\pi}{2}}p\left\{\cos\left(\frac{p^2}{4}\right)\left[\frac{1}{2}-C\left(\frac{p^2}{4}\right)\right]+\right.$ $\left.+\sin\left(\frac{p^2}{4}\right)\left[\frac{1}{2}-S\left(\frac{p^2}{4}\right)\right]\right\}$
5.72	$\cos(t^2)$	$\sqrt{\frac{\pi}{2}}p\left\{\cos\left(\frac{p^2}{4}\right)\left[\frac{1}{2}-S\left(\frac{p^2}{4}\right)\right]-\right.$ $\left.-\sin\left(\frac{p^2}{4}\right)\left[\frac{1}{2}-C\left(\frac{p^2}{4}\right)\right]\right\}$
5.73	$\sin(2\sqrt{at})$	$\sqrt{\frac{\pi a}{p}}e^{-\frac{a}{p}}$
5.74	$\cos(2\sqrt{at})$	$1+i\sqrt{\frac{\pi a}{p}}e^{-\frac{a}{p}}\operatorname{erf}\left(i\sqrt{\frac{a}{p}}\right)$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt} f(t)\,dt$
5.75	$t^n \sin(2\sqrt{at})$	$(-1)^n 2^{-n-\frac{1}{2}} \sqrt{\pi}\, \dfrac{e^{-\frac{a}{p}}}{p^n} \times$ $\times \mathrm{He}_{2n+1}\left(\sqrt{\dfrac{2a}{p}}\right)$
5.76	$\dfrac{\sin(t^2)}{t}$	$\dfrac{p}{2} D_{-1}\left(\dfrac{ip}{\sqrt{2i}}\right) D_{-1}\left(\dfrac{p}{\sqrt{2i}}\right)$
5.77	$t^n \sin(\sqrt{2t})$	$(-1)^n \dfrac{\sqrt{\pi}}{2^{n+\frac{1}{2}}} \dfrac{e^{-\frac{1}{2p}}}{p^n} \mathrm{He}_{2n+1}\left(\dfrac{1}{\sqrt{p}}\right)$
5.78	$t^{n-\frac{1}{2}} \cos(\sqrt{2t})$	$(-1)^n \dfrac{\sqrt{\pi}}{2^n} \dfrac{e^{-\frac{1}{2p}}}{p^{n-\frac{1}{2}}} \mathrm{He}_{2n}\left(\dfrac{1}{\sqrt{p}}\right)$
5.79	$t^{\frac{\nu-1}{2}} \sin\left[\dfrac{\pi}{2}\left(\dfrac{\nu}{2}+1\right)\right] \times$ $\times \sin\left(\sqrt{\dfrac{2t}{a}}\right), \quad \mathrm{Re}\,\nu>0$	$2^{-1-\frac{\nu}{2}} \sqrt{\pi}\, p^{\frac{1-\nu}{2}} \exp\left(-\dfrac{1}{4ap}\right) \times$ $\times\left[D_\nu\left(-\dfrac{1}{\sqrt{ap}}\right)-D_\nu\left(\dfrac{1}{\sqrt{ap}}\right)\right]$
5.80	$\dfrac{\cos\sqrt{2t}}{t^{\frac{\nu}{2}+1}}, \quad \mathrm{Re}\,\nu<0$	$2^{\frac{\nu}{2}}\, \Gamma(-\nu)\, p^{1+\frac{\nu}{2}} e^{-\frac{1}{4p}} \times$ $\times\left[D_\nu\left(\dfrac{i}{\sqrt{p}}\right)+D_\nu\left(-\dfrac{i}{\sqrt{p}}\right)\right]$
5.81	$t^{-\frac{\nu+1}{2}} \sin\left[\dfrac{\pi}{2}(1-\nu)\right] \times$ $\times \cos\left(\sqrt{\dfrac{2t}{a}}\right), \quad \mathrm{Re}\,\nu>0$	$2^{\frac{\nu}{2}-1} \sqrt{\pi}\, p^{\frac{\nu+1}{2}} e^{-\frac{1}{4ap}} \times$ $\times\left[D_{-\nu}\left(\dfrac{1}{\sqrt{ap}}\right)+D_{-\nu}\left(-\dfrac{1}{\sqrt{ap}}\right)\right]$
5.82	$\dfrac{\sin(2\sqrt{at})}{t}$	$\pi p\, \mathrm{erf}\left(\sqrt{\dfrac{a}{p}}\right)$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
5.83	$\sqrt{t}\cos(2\sqrt{at})$	$\sqrt{\pi}\,p^{-\frac{3}{2}}\left(\frac{p}{2}-a\right)e^{-\frac{a}{p}}$
5.84	$\sqrt{t}\sin(2\sqrt{at})$	$\frac{\sqrt{a}}{p}-i\sqrt{\pi}\,p^{-\frac{3}{2}}\left(\frac{p}{2}-a\right)e^{-\frac{a}{p}}\times$ $\times\operatorname{erf}\left(i\sqrt{\frac{a}{p}}\right)$
5.85	$\frac{\sin(2\sqrt{at})}{\sqrt{t}}$	$-i\sqrt{\pi p}\,e^{-\frac{a}{p}}\operatorname{erf}\left(i\sqrt{\frac{a}{p}}\right)$
5.86	$\frac{\cos(2\sqrt{at})}{\sqrt{t}}$	$\sqrt{\pi p}\,e^{-\frac{a}{p}}$
5.87	$t^{n-\frac{1}{2}}\cos(2\sqrt{at})$	$(-2)^{-n}\sqrt{\pi}\,p^{-n+\frac{1}{2}}e^{-\frac{a}{p}}\times$ $\times\mathrm{He}_{2n}\left(\sqrt{\frac{2a}{p}}\right)$
5.88	$\frac{1}{\sqrt{(2t-t^2)}}\cos(a\sqrt{2t-t^2})$ при $0<t<2$; 0 при $t>2$	$\pi pe^{-p}J_0(\sqrt{a^2-p^2})$
5.89	$\frac{1}{\sqrt{t}}\operatorname{sh}\left[\frac{a}{\operatorname{ch}a-\cos(\sqrt{t})}\right]$ $\operatorname{Re}a>0$	$2\pi pe^{\alpha^2p}\left[\vartheta_3\left(2ap,\frac{4p}{i\pi}\right)+\right.$ $\left.+\hat{\vartheta}_3\left(2ap,\frac{4p}{i\pi}\right)\right]-\sqrt{\pi p}$
5.90	$\frac{\cos(at)-\cos(bt)}{t}$	$\frac{p}{2}\ln\left(\frac{p^2+b^2}{p^2+a^2}\right)$, $\operatorname{Re}p>\|\operatorname{Im}a\|,\ \|\operatorname{Im}b\|$
5.91	$\frac{\cos(at)-\cos(bt)}{t^2}$	$\frac{p^2}{2}\ln\frac{p^2+a^2}{p^2+b^2}+bp\operatorname{arctg}\left(\frac{b}{p}\right)-$ $-ap\operatorname{arctg}\left(\frac{a}{p}\right)$, $\operatorname{Re}p\geqslant\|\operatorname{Im}a\|,\ \|\operatorname{Im}b\|$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt} f(t)\,dt$
5.92	$\dfrac{\sin(at)\sin(bt)}{t}$	$\dfrac{p}{4}\ln\dfrac{p^2+(a+b)^2}{p^2-(a-b)^2}$ $\operatorname{Re} p > \lvert \operatorname{Im}(\pm a \pm b)\rvert$
5.93	$\dfrac{\sin(at)\sin(bt)}{t^2}$	$\dfrac{ap}{2}\operatorname{arctg}\dfrac{2bp}{p^2+a^2-b^2}+$ $+\dfrac{bp}{2}\operatorname{arctg}\dfrac{2ap}{p^2-a^2+b^2}+$ $+\dfrac{p^2}{4}\ln\dfrac{p^2+(a-b)^2}{p^2+(a+b)^2}$ $\operatorname{Re} p \geqslant \lvert \operatorname{Im}(\pm a \pm b)\rvert$
5.94	$\cos^2(at)$	$\dfrac{p^2+2a^2}{p^2+4a^2}$, $\operatorname{Re} p > 2\lvert \operatorname{Im} a\rvert$
5.95	$\cos^3(at)$	$\dfrac{p^2(p^2+7a^2)}{(p^2+a^2)(p^2+9a^2)}$, $\operatorname{Re} p > 3\lvert \operatorname{Im} a\rvert$
5.96	$\dfrac{\sin[(2n+1)t]}{\sin t}$	$1+\sum\limits_{m=1}^{n}\dfrac{2p^2}{p^2+4m^2}$
5.97	$\operatorname{tg} t\cos[(2n+1)t]$	$(2n+1)\dfrac{p}{p^2+(2n+1)^2}+$ $+2p\sum\limits_{m=0}^{\infty}\dfrac{(-1)^m(2m+1)}{p^2+(2m+1)^2}$
5.98	$\dfrac{\sin\alpha\sqrt{2t}\sin\beta\sqrt{2t}}{\sqrt{t}}$	$\dfrac{\pi}{\sqrt{2}}\sqrt{\alpha\beta}\, e^{-\frac{\alpha^2+\beta^2}{2p}} I_{\frac{1}{2}}\left(\dfrac{2\alpha\beta}{p}\right)$
5.99	$\dfrac{\cos\alpha\sqrt{2t}\cos\beta\sqrt{2t}}{\sqrt{t}}$	$\dfrac{\pi}{\sqrt{2}}\sqrt{\alpha\beta}\, e^{-\frac{\alpha^2+\beta^2}{2p}} I_{-\frac{1}{2}}\left(\dfrac{2\alpha\beta}{p}\right)$
5.100	$\dfrac{e^{-\beta t}}{\sqrt{\frac{\pi}{2}t(4\alpha^2-t^2)}}\times$ $\times\cos\left[\left(2\nu+\dfrac{1}{2}\right)\arccos\left(\dfrac{t}{2\alpha}\right)\right]$	$(-1)^\nu p\sqrt{p+\beta}\, I_\nu[\alpha(p+\beta)]\times$ $\times K_{\nu+\frac{1}{2}}[\alpha(p+\beta)]$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
5.101	$\sin(at+\alpha)$	$\frac{p}{\sqrt{p^2+a^2}}\sin\left(\alpha+\operatorname{arctg}\frac{a}{p}\right)$
5.102	$\cos(at+\alpha)$	$\frac{p}{\sqrt{p^2+a^2}}\cos\left(\alpha+\operatorname{arctg}\frac{a}{p}\right)$
5.103	$\frac{1}{\sqrt{t}}\sin\left(\frac{\alpha}{2t}\right)$	$\sqrt{\pi p}\,e^{-\sqrt{\alpha p}}\sin\sqrt{\alpha p}$
5.104	$\frac{1}{\sqrt{t}}\cos\left(\frac{\alpha}{2t}\right)$	$\sqrt{\pi p}\,e^{-\sqrt{\alpha p}}\cos\sqrt{\alpha p}$
5.105	$\sin(\alpha[t])$	$(e^p-1)\frac{\sin\alpha}{e^{2p}-2e^p\cos\alpha+1}$
5.106	$\cos(\alpha[t])$	$(e^p-1)\frac{e^p-\cos\alpha}{e^{2p}-2e^p\cos\alpha+1}$
5.107	$a^{[t]}\sin(\beta[t])$	$(e^p-1)\frac{\alpha\sin\beta}{e^{2p}-2\alpha e^p\cos\beta+\alpha^2}$
5.108	$\alpha^{[t]}\cos(\beta[t])$	$(e^p-1)\frac{e^p-\alpha\cos\beta}{e^{2p}-2\alpha e^p\cos\beta+\alpha^2}$

§ 6. Обратные тригонометрические функции

6.1	$\arcsin t$ при $0<t<1$ 0 при $t>1$	$\frac{\pi}{2}[I_0(p)-\mathbf{L}_0(p)]$
6.2	$t\arcsin t$ при $0<t<1$ 0 при $t>1$	$\frac{\pi}{2p}[\mathbf{L}_0(p)-I_0(p)+$ $+p\mathbf{L}_1(p)-pI_1(p)]+1$
6.3	$\operatorname{arctg}\left(\frac{t}{a}\right)$	$-\operatorname{ci}(ap)\sin(ap)-\operatorname{si}(ap)\cos(ap)$
6.4	$\operatorname{arcctg}\left(\frac{t}{a}\right)$	$\frac{\pi}{2}+\operatorname{ci}(ap)\sin(ap)+\operatorname{si}(ap)\cos(ap)$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
6.5	$t\operatorname{arctg}\left(\frac{t}{a}\right)$	$\frac{1}{p}[-\operatorname{ci}(ap)\sin(ap)-$ $-\operatorname{si}(ap)\cos(ap)]+$ $+a[\operatorname{ci}(ap)\cos(ap)-\operatorname{si}(ap)\sin(ap)]$
6.6	$t\operatorname{arcctg}\left(\frac{t}{a}\right)$	$\frac{1}{p}\left[\frac{\pi}{2}+\operatorname{ci}(ap)\sin(ap)+\right.$ $\left.+\operatorname{si}(ap)\cos(ap)\right]+$ $+a[\operatorname{si}(ap)\sin(ap)-\operatorname{ci}(ap)\cos(ap)]$
6.7	0 при $t<\alpha$ $\frac{1}{\alpha}\left(\frac{\pi}{2}-\arcsin\frac{\alpha}{t}\right)$ при $t>\alpha$, $\alpha>0$	$\int_p^\infty K_0(\alpha s)\,ds$
6.8	0 при $t<\sqrt{\alpha^2+\beta^2}$ $\frac{2}{\pi}\arcsin\left(\frac{\alpha}{\sqrt{t^2-\beta^2}}\right)$ при $t>\sqrt{\alpha^2+\beta^2}$, $\alpha>0$	$e^{-p\sqrt{\alpha^2+\beta^2}}-$ $-\alpha\int_p^\infty \operatorname{ch}\beta(p-s)K_0(s\sqrt{\alpha^2+\beta^2})\,ds$
6.9	$t^{\nu-\frac{1}{2}}(1+t^2)^{\frac{\nu}{2}-\frac{1}{4}}\times$ $\times e^{-i\left(\nu-\frac{1}{2}\right)\operatorname{arcctg}t}$ $\operatorname{Re}\nu>-\frac{1}{2}$	$\frac{i\sqrt{\pi}}{2}\Gamma\left(\nu+\frac{1}{2}\right)p^{1-\nu}e^{-\frac{ip}{2}}\times$ $\times H_\nu^{(1)}\left(\frac{p}{2}\right)$
6.10	$t^{\nu-\frac{1}{2}}(1+t^2)^{\frac{\nu}{2}-\frac{1}{4}}\times$ $\times\sin\left[\left(\nu-\frac{1}{2}\right)\operatorname{arcctg}t\right]$ $\operatorname{Re}\nu>-\frac{1}{2}$	$-\frac{\sqrt{\pi}}{2}\Gamma\left(\nu+\frac{1}{2}\right)p^{1-\nu}\times$ $\times\left[J_\nu\left(\frac{p}{2}\right)\cos\left(\frac{p}{2}\right)+\right.$ $\left.+Y_\nu\left(\frac{p}{2}\right)\sin\left(\frac{p}{2}\right)\right]$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
6.11	$t^{\nu-\frac{1}{2}}(1+t^2)^{\frac{\nu}{2}-\frac{1}{4}}\times$ $\times\cos\left[\left(\nu-\frac{1}{2}\right)\operatorname{arcctg}t\right]$ $\operatorname{Re}\nu>-\frac{1}{2}$	$\frac{\sqrt{\pi}}{2}\Gamma\left(\nu+\frac{1}{2}\right)p^{1-\nu}\times$ $\times\left[J_\nu\left(\frac{p}{2}\right)\sin\left(\frac{p}{2}\right)-\right.$ $\left.-Y_\nu\left(\frac{p}{2}\right)\cos\left(\frac{p}{2}\right)\right]$
6.12	$t^{\nu-\frac{1}{2}}(1+t^2)^{\frac{\nu}{2}-\frac{1}{4}}\times$ $\times\sin\left[a-\left(\nu-\frac{1}{2}\right)\operatorname{arcctg}t\right]$ $\operatorname{Re}\nu>-\frac{1}{2}$	$\frac{\sqrt{\pi}}{2}\Gamma\left(\nu+\frac{1}{2}\right)p^{1-\nu}\times$ $\times\left[J_\nu\left(\frac{p}{2}\right)\cos\left(\frac{p}{2}-a\right)+\right.$ $\left.+Y_\nu\left(\frac{p}{2}\right)\sin\left(\frac{p}{2}-a\right)\right]$
6.13	$\frac{\cos\left[\left(2n+\frac{1}{2}\right)\arccos\left(\frac{t}{2a}\right)\right]}{\sqrt{4a^2t-t^3}}$ при $0<t<2a$; 0 при $t>2a$	$(-1)^n\sqrt{\frac{\pi}{2}}p^{\frac{3}{2}}I_n(ap)K_{n+\frac{1}{2}}(ap)$
6.14	$\frac{\cos\left[\nu\arccos\left(\frac{t}{2a}\right)\right]}{\sqrt{4a^2t-t^3}}$ при $0<t<2a$; 0 при $t>2a$	$\left(\frac{\pi p}{2}\right)^{\frac{3}{2}}\left[I_{\frac{\nu}{2}-\frac{1}{4}}(ap)I_{-\frac{\nu}{2}-\frac{1}{4}}(ap)-\right.$ $\left.-I_{\frac{\nu}{2}+\frac{1}{4}}(ap)I_{-\frac{\nu}{2}+\frac{1}{4}}(ap)\right]$
6.15	0 при $0<t<a$; $\frac{\cos\left\{n\arccos\left(\frac{2t-a-b}{b-a}\right)\right\}}{\sqrt{(t-a)(b-t)}}$ при $a<t<b$; 0 при $t>b$	$\pi p\exp\left\{-\frac{1}{2}(a+b)p\right\}\times$ $\times I_n\left(\frac{b-a}{2}p\right)$
6.16	$\frac{1}{\sqrt{t(t+1)(t+2)}}\times$ $\times\cos\left[\nu\arccos\left(\frac{1}{t+1}\right)\right]$	$\sqrt{\pi}\,pe^pD_{\nu-\frac{1}{2}}(\sqrt{2p})\times$ $\times D_{-\nu-\frac{1}{2}}(\sqrt{2p})$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
6.17	$\dfrac{\cos\{\nu\arccos(e^{-t})\}}{\sqrt{1-e^{-2t}}}$	$\dfrac{\pi 2^{-p}}{\mathrm{B}\left(\frac{p+\nu+1}{2},\ \frac{p-\nu+1}{2}\right)}$
6.18	$\dfrac{\exp(-bt)}{\sqrt{t}\,(a^2-t^2)}\times$ $\times\cos\left[2\nu\arccos\left(\dfrac{t}{a}\right)\right]$ при $t<a$ 0 при $t>a$	$\left(\dfrac{\pi}{2}\right)^{\frac{3}{2}}p(\sqrt{p+b})\times$ $\times\left\{I_{\nu-\frac{1}{4}}\left[\frac{a}{2}(p+b)\right]\times\right.$ $\times I_{-\nu-\frac{1}{4}}\left[\frac{a}{2}(p+b)\right]-$ $-I_{\nu+\frac{1}{4}}\left[\frac{a}{2}(p+b)\right]\times$ $\left.\times I_{-\nu+\frac{1}{4}}\left[\frac{a}{2}(p+b)\right]\right\}$

§ 7. Гиперболические функции

7.1	$\operatorname{sh}(at)$	$\dfrac{ap}{p^2-a^2}$, $\operatorname{Re}p>\lvert\operatorname{Re}a\rvert$
7.2	$\operatorname{ch}(at)$	$\dfrac{p^2}{p^2-a^2}$, $\operatorname{Re}p>\lvert\operatorname{Re}a\rvert$
7.3	$\dfrac{1}{\operatorname{ch}t}$	$\dfrac{p}{2}\psi\left(\dfrac{p}{4}+\dfrac{3}{4}\right)-\dfrac{p}{2}\psi\left(\dfrac{p}{4}+\dfrac{1}{4}\right)$ $\operatorname{Re}p>-1$
7.4	$\dfrac{1}{t}-\dfrac{1}{\operatorname{sh}t}$	$p\left[\psi\left(\dfrac{p}{2}+\dfrac{1}{2}\right)-\ln\left(\dfrac{p}{2}\right)\right]$
7.5	$\dfrac{1}{t}-\operatorname{cth}t$	$1+p\psi\left(\dfrac{p}{2}\right)-p\ln\dfrac{p}{2}$
7.6	$\operatorname{th}t$	$\dfrac{p}{2}\psi\left(\dfrac{p}{4}+\dfrac{1}{2}\right)-\dfrac{p}{2}\psi\left(\dfrac{p}{4}\right)-1$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
7.7	$\frac{2}{t}\operatorname{sh}(at)$	$p\ln\frac{p+a}{p-a}$, $\operatorname{Re}p>\lvert\operatorname{Re}a\rvert$
7.8	0 при $0<t<1$ $\frac{2}{t}\operatorname{sh}(at)$ при $t>1$	$-p\operatorname{Ei}(a-p)+p\operatorname{Ei}(-a-p)$ $\operatorname{Re}p>\lvert\operatorname{Re}a\rvert$
7.9	$\frac{2}{t}\operatorname{sh}(at)$ при $0<t<1$ 0 при $t>1$	$p\ln\frac{p+a}{p-a}+p\operatorname{Ei}(a-p)-$ $-p\operatorname{Ei}(-a-p)$
7.10	0 при $0<t<1$ $\frac{2}{t}\operatorname{ch}(at)$ при $t>1$	$-p\operatorname{Ei}(a-p)-p\operatorname{Ei}(-a-p)$ $\operatorname{Re}p>\lvert\operatorname{Re}a\rvert$
7.11	$\operatorname{sh}^2(at)$	$\frac{2a^2}{p^2-4a^2}$, $\operatorname{Re}p>2\lvert\operatorname{Re}a\rvert$
7.12	$\operatorname{ch}^2(at)$	$\frac{p^2-2a^2}{p^2-4a^2}$, $\operatorname{Re}p>2\lvert\operatorname{Re}a\rvert$
7.13	$\frac{1}{\operatorname{ch}^2 t}$	$\frac{p^2}{2}\left[\psi\left(\frac{p}{4}+\frac{1}{2}\right)-\psi\left(\frac{p}{4}\right)\right]-p$ $\operatorname{Re}p>-2$
7.14	$[\operatorname{sh}(at)]^\nu$ $\operatorname{Re}a>0$, $\operatorname{Re}\nu>-1$	$\frac{2^{-\nu-1}}{a}pB\left(\frac{p}{2a}-\frac{\nu}{2},\ \nu+1\right)$, $\operatorname{Re}p>\operatorname{Re}\nu a$
7.15	$[\operatorname{ch}(at)-1]^\nu$, $\operatorname{Re}a>0$, $\operatorname{Re}\nu>-\frac{1}{2}$	$\frac{2^{-\nu}}{a}pB\left(\frac{p}{a}-\nu,\ 2\nu+1\right)$ $\operatorname{Re}p>\operatorname{Re}\nu a$
7.16	$\frac{1}{t}\operatorname{th}t$	$p\ln\left(\frac{p}{4}\right)+2p\ln\frac{\Gamma\left(\frac{p}{4}\right)}{\Gamma\left(\frac{p}{4}+\frac{1}{2}\right)}$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
7.17	$\dfrac{\operatorname{ch} t-1}{t\operatorname{ch} t}$	$2p\ln\dfrac{\Gamma\left(\frac{p}{4}+\frac{3}{4}\right)}{\Gamma\left(\frac{p}{4}+\frac{1}{4}\right)}-p\ln\left(\frac{p}{4}\right)$
7.18	$\dfrac{1-\operatorname{ch} t}{t}$	$p\ln\dfrac{p}{\sqrt{p^2-1}}$
7.19	$\dfrac{1-\operatorname{ch} t}{t^2}$	$p\ln\dfrac{\sqrt{p^2-1}}{p}+p\operatorname{Arcth} p$
7.20	$e^{-bt}\operatorname{sh} at$	$\dfrac{ap}{(p+b)^2-a^2}$
7.21	$e^{-bt}\operatorname{ch} at$	$\dfrac{p(p+b)}{(p+b)^2-a^2}$
7.22	$e^{-at}\operatorname{sh}(2b\sqrt{t})$	$\dfrac{\sqrt{\pi}\,bp\exp\left(\frac{b^2}{p+a}\right)}{(p+a)^{\frac{3}{2}}}$
7.23	$\dfrac{e^{-at}\operatorname{ch}(2b\sqrt{t})}{\sqrt{t}}$	$\dfrac{\sqrt{\pi}\,p\exp\left(\frac{b^2}{p+a}\right)}{\sqrt{p+a}}$
7.24	$t^{\nu-1}\operatorname{sh}(at)$, $\operatorname{Re}\nu>-1$	$\dfrac{\Gamma(\nu)p}{2}[(p-a)^{-\nu}-(p+a)^{-\nu}]$ $\operatorname{Re}p>\lvert\operatorname{Re}a\rvert$
7.25	$t^{\nu-1}\operatorname{ch}(at)$, $\operatorname{Re}\nu>0$	$\dfrac{\Gamma(\nu)p}{2}[(p-a)^{-\nu}+(p+a)^{-\nu}]$ $\operatorname{Re}p>\lvert\operatorname{Re}a\rvert$
7.26	$t^{\nu-1}\operatorname{csch} t$, $\operatorname{Re}\nu>1$	$2^{1-\nu}\Gamma(\nu)p\zeta\left(\nu,\frac{p+1}{2}\right)$, $\operatorname{Re}p>-1$
7.27	$t^{\nu-1}\operatorname{cth} t$, $\operatorname{Re}\nu>1$	$\Gamma(\nu)p\left[2^{1-\nu}\zeta\left(\nu,\frac{p}{2}\right)-p^{-\nu}\right]$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
7.28	$t^{\nu-1}(\operatorname{cth} t-1)$, $\operatorname{Re}\nu>1$	$2^{1-\nu}\Gamma(\nu)p\zeta\left(\nu,\frac{p}{2}+1\right)$ $\operatorname{Re}p>-2$
7.29	0 при $0<t<a$ $(\operatorname{ch}t-\operatorname{ch}a)^{\nu-1}$ при $t>a$, $\operatorname{Re}\nu>0$	$-i\sqrt{\frac{2}{\pi}}e^{\nu\pi i}\Gamma(\nu)(\operatorname{sh}a)^{\nu-\frac{1}{2}}\times$ $\times pQ_{p-\frac{1}{2}}^{\frac{1}{2}-\nu}(\operatorname{ch}a)$, $\operatorname{Re}p>\operatorname{Re}\nu-1$
7.30	$\frac{\operatorname{sh}^2 t}{t}$	$\frac{p}{2}\ln\sqrt{1-\frac{4}{p^2}}$
7.31	$\frac{\operatorname{sh}t}{\sqrt{t}}$	$\sqrt{\frac{\pi}{2}}\frac{p\left(\sqrt{p^2-1}+p\right)^{-\frac{1}{2}}}{\sqrt{p^2-1}}$
7.32	$\frac{\operatorname{ch}t}{\sqrt{t}}$	$\sqrt{\frac{\pi}{2}}\frac{p\left(p-\sqrt{p^2-1}\right)^{-\frac{1}{2}}}{\sqrt{p^2-1}}$
7.33	$\sin(at)\operatorname{sh}(at)$	$\frac{2a^2p^2}{p^4+4a^4}$, $\operatorname{Re}p>\lvert\operatorname{Re}a\rvert+\lvert\operatorname{Im}a\rvert$
7.34	$\cos(at)\operatorname{sh}(at)$	$\frac{p(ap^2-2a^3)}{p^4+4a^4}$, $\operatorname{Re}p>\lvert\operatorname{Re}a\rvert+\lvert\operatorname{Im}a\rvert$
7.35	$\sin(at)\operatorname{ch}(at)$	$\frac{p(ap^2+2a^3)}{p^4+4a^4}$ $\operatorname{Re}p>\operatorname{Re}(\pm a\pm ia)$
7.36	$\cos(at)\operatorname{ch}(at)$	$\frac{p^4}{p^4+4a^4}$, $\operatorname{Re}p>\operatorname{Re}(\pm a\pm ia)$
7.37	$\operatorname{sh}(at)\operatorname{ch}(bt)$	$\frac{ap(p^2-a^2+b^2)}{[p^2-(a-b)^2][p^2-(a+b)^2]}$
7.38	$\operatorname{sh}(at)-\sin(at)$	$\frac{2a^3p}{p^4-a^4}$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
7.39	$\operatorname{sh}(\sqrt{t})+\sin(\sqrt{t})$	$\sqrt{\frac{\pi}{p}}\operatorname{ch}\left(\frac{1}{4p}\right)$
7.40	$\operatorname{sh}(\sqrt{t})-\sin(\sqrt{t})$	$\sqrt{\frac{\pi}{p}}\operatorname{sh}\left(\frac{1}{4p}\right)$
7.41	$\frac{\operatorname{ch}(\sqrt{t})+\cos(\sqrt{t})}{\sqrt{t}}$	$2\sqrt{\pi p}\operatorname{ch}\left(\frac{1}{4p}\right)$
7.42	$\frac{\operatorname{ch}(\sqrt{t})-\cos(\sqrt{t})}{\sqrt{t}}$	$2\sqrt{\pi p}\operatorname{sh}\left(\frac{1}{4p}\right)$
7.43	$\sqrt{t}\,[\operatorname{ch}(\sqrt{t})+\cos(\sqrt{t})]$	$\sqrt{\frac{\pi}{p}}\left[\operatorname{ch}\left(\frac{1}{4p}\right)+\frac{1}{2p}\operatorname{sh}\left(\frac{1}{4p}\right)\right]$
7.44	$\sqrt{t}\,[\operatorname{ch}(\sqrt{t})-\cos(\sqrt{t})]$	$\sqrt{\frac{\pi}{p}}\left[\operatorname{sh}\left(\frac{1}{4p}\right)+\frac{1}{2p}\operatorname{ch}\left(\frac{1}{4p}\right)\right]$
7.45	$e^{-a\operatorname{sh}(t)}$, $\operatorname{Re} a>0$	$\pi p\csc(\pi p)\,[\mathbf{J}_p(a)-J_p(a)]$
7.46	$e^{-a\operatorname{sh}(t+i\psi)}$, $-\frac{\pi}{2}<\psi<\frac{\pi}{2}$ $\lvert\arg a\rvert<\frac{\pi}{2}-\psi$	$p\csc(\pi p)\left[\int\limits_0^\pi e^{ia\sin\psi\cos\varphi}\times\right.$ $\times\cos(p\varphi-a\cos\psi\sin\varphi)\,d\varphi-$ $\left.-\pi e^{i\psi p}J_p(a)\right]$
7.47	$e^{-a\operatorname{ch}t}$, $\operatorname{Re} a>0$	$p\csc(\pi p)\left[\int\limits_0^\pi e^{a\cos\varphi}\cos(p\varphi)\,d\varphi-\right.$ $\left.-\pi I_p(a)\right]$
7.48	$\left[\operatorname{sh}\left(\frac{t}{2}\right)\right]^{2\beta}e^{-2\alpha\operatorname{cth}\left(\frac{t}{2}\right)}$ $\operatorname{Re}\alpha>0$	$\frac{1}{2}\alpha^{\frac{1}{2}\beta-\frac{1}{2}}p\Gamma(p-\beta)\times$ $\times\left[W_{-p+\frac{1}{2},\beta}(4\alpha)-\right.$ $\left.-(p-\beta)W_{-p-\frac{1}{2},\beta}(4\alpha)\right]$ $\operatorname{Re}p>\operatorname{Re}\beta$

№	$f(t)$	$\bar{f}(p) = p\int\limits_0^\infty e^{-pt} f(t)\,dt$
7.49	$2^{\frac{3}{4}}\, t^{-\frac{3}{4}} \{\operatorname{sh}(\sqrt{8t}) + \sin(\sqrt{8t})\}$	$\pi \sqrt{p}\, I_{\frac{1}{4}}\left(\frac{1}{p}\right) \operatorname{ch}\left(\frac{1}{p}\right)$
7.50	$2^{\frac{3}{4}}\, t^{-\frac{3}{4}} \{\operatorname{sh}(\sqrt{8t}) - \sin(\sqrt{8t})\}$	$\pi \sqrt{p}\, I_{\frac{1}{4}}\left(\frac{1}{p}\right) \operatorname{sh}\left(\frac{1}{p}\right)$
7.51	$2^{\frac{3}{4}}\, t^{-\frac{3}{4}} (\operatorname{ch}(\sqrt{8t}) + \cos(\sqrt{8t}))$	$\pi \sqrt{p}\, I_{-\frac{1}{4}}\left(\frac{1}{p}\right) \operatorname{ch}\left(\frac{1}{p}\right)$
7.52	$2^{\frac{3}{4}}\, t^{-\frac{3}{4}} (\operatorname{ch}(\sqrt{8t}) - \cos(\sqrt{8t}))$	$\pi \sqrt{p}\, I_{-\frac{1}{4}}\left(\frac{1}{p}\right) \operatorname{sh}\left(\frac{1}{p}\right)$
7.53	$\ln \operatorname{ch} t$	$\frac{1}{2}\left[\psi\left(\frac{p}{4}+\frac{1}{2}\right) - \psi\left(\frac{p}{4}\right)\right] - \frac{1}{p}$
7.54	$\ln(\operatorname{sh} t) - \ln t$	$\ln\left(\frac{p}{2}\right) - \frac{1}{2p} - \psi\left(\frac{p}{2}\right)$
7.55	$\ln \operatorname{th} t$	$-2\psi\left(\frac{p}{2}\right) + \psi\left(\frac{p}{4}\right) - C$
7.56	$\ln \frac{\operatorname{sh} t}{t}$	$-\omega'\left(\frac{p}{2}\right)$
7.57	$\operatorname{sh}(2\sqrt{at})$	$\sqrt{\frac{\pi a}{p}}\, e^{\frac{a}{p}}$
7.58	$\operatorname{ch}(2\sqrt{at})$	$\sqrt{\frac{\pi a}{p}}\, e^{\frac{a}{p}} \operatorname{erf}\left(\sqrt{\frac{a}{p}}\right) + 1$
7.59	$\sqrt{t}\, \operatorname{sh}(2\sqrt{at})$	$\sqrt{\pi}\, p^{-\frac{3}{2}} \left(\frac{1}{2} p + a\right) e^{\frac{a}{p}} \times$ $\times \operatorname{erf}\left(\sqrt{\frac{a}{p}}\right) - \frac{\sqrt{a}}{p}$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
7.60	$\sqrt{t}\,\text{ch}\,(2\sqrt{at})$	$\sqrt{\pi}\,p^{-\frac{3}{2}}\left(\frac{1}{2}\,p+a\right)e^{\frac{a}{p}}$
7.61	$\frac{\text{sh}\,(2\sqrt{at})}{\sqrt{t}}$	$\sqrt{\pi p}\,e^{\frac{a}{p}}\,\text{erf}\left(\sqrt{\frac{a}{p}}\right)$
7.62	$\frac{\text{ch}\,(2\sqrt{at})}{\sqrt{t}}$	$\sqrt{\pi p}\,e^{\frac{a}{p}}$
7.63	$\frac{\text{sh}^2\,(\sqrt{at})}{\sqrt{t}}$	$\frac{1}{2}\sqrt{\pi p}\left(e^{\frac{a}{p}}-1\right)$
7.64	$\frac{\text{ch}^2\,(\sqrt{at})}{\sqrt{t}}$	$\frac{1}{2}\sqrt{\pi p}\left(e^{\frac{a}{p}}+1\right)$
7.65	$t^{-\frac{3}{4}}\,\text{sh}\left(2^{\frac{3}{2}}\sqrt{at}\right)$	$\pi\,(2a)^{\frac{1}{4}}\sqrt{p}\,e^{\frac{a}{p}}\,I_{\frac{1}{4}}\left(\frac{a}{p}\right)$
7.66	$t^{-\frac{3}{4}}\,\text{ch}\left(2^{\frac{3}{2}}\sqrt{at}\right)$	$\pi\,(2a)^{\frac{1}{4}}\sqrt{p}\,e^{\frac{a}{p}}\,I_{-\frac{1}{4}}\left(\frac{a}{p}\right)$
7.67	$t^{\nu-1}\,\text{sh}\,(\sqrt{2at}),\quad \text{Re}\,\nu>-\frac{1}{2}$	$\frac{\Gamma(2\nu)}{2^\nu}\,p^{1-\nu}e^{\frac{a}{4p}}\times$ $\times\left[D_{-2\nu}\left(-\sqrt{\frac{a}{p}}\right)-\right.$ $\left.-D_{-2\nu}\left(\sqrt{\frac{a}{p}}\right)\right]$
7.68	$t^{\nu-1}\,\text{ch}\,(\sqrt{2at}),\quad \text{Re}\,\nu>0$	$\frac{\Gamma(2\nu)}{2^\nu}\,p^{1-\nu}e^{\frac{a}{4p}}\times$ $\times\left\{D_{-2\nu}\left(-\sqrt{\frac{a}{p}}\right)+\right.$ $\left.+D_{-2\nu}\left(\sqrt{\frac{a}{p}}\right)\right\}$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
7.69	$\dfrac{\operatorname{sh}(a\sqrt{1-e^{-t}})}{\sqrt{e^t-1}}$	$\sqrt{\pi}p\Gamma\left(p+\frac{1}{2}\right)2^pa^{-p}\mathbf{L}_p(a)$ $\operatorname{Re}p>-\frac{1}{2}$
7.70	$\dfrac{\operatorname{ch}(a\sqrt{1-e^{-t}})}{\sqrt{e^t-1}}$	$\sqrt{\pi}p\Gamma\left(p+\frac{1}{2}\right)2^pa^{-p}I_p(a)$ $\operatorname{Re}p>-\frac{1}{2}$
7.71	$\operatorname{th}\left(\frac{\pi}{2}\sqrt{e^{2t}-1}\right)$	$2^{-p}p\zeta(p-1)$

§ 8 Обратные гиперболические функции

8.1	$\operatorname{Arsh} t$	$\frac{\pi}{2}[\mathbf{H}_0(p)-Y_0(p)]$
8.2	0 при $0<t<a$ $\operatorname{Arch}\left(\frac{t}{a}\right)$ при $t>a$	$K_0(ap)$
8.3	$\operatorname{Arch}\left(1+\frac{t}{a}\right)$, $\lvert\arg a\rvert<\pi$	$e^{ap}K_0(ap)$
8.4	$t\operatorname{Arsh} t$	$\pi\dfrac{\mathbf{H}_0(p)-Y_0(p)}{2p}+$ $+\pi\dfrac{\mathbf{H}_1(p)-Y_1(p)}{2}-1$
8.5	$\operatorname{sh}(\nu\operatorname{Arch}t)=$ $=\frac{1}{2}[(t+\sqrt{t^2-1})^\nu-$ $-(t-\sqrt{t^2-1})^\nu]$ при $t>1$ 0 при $0<t<1$	$\nu K_\nu(p)$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt} f(t)\,dt$
8.6	$\dfrac{\operatorname{ch}(\nu \operatorname{Arch} t)}{\sqrt{t^2-1}}=\dfrac{(t+\sqrt{t^2-1})^\nu+(t-\sqrt{t^2-1})^\nu}{2\sqrt{t^2-1}}$ при $t>1$; 0 при $0<t<1$	$pK_\nu(p)$
8.7	$\operatorname{sh}[(2n+1)\operatorname{Arsh} t]$	$pO_{2n+1}(p)$
8.8	$\operatorname{ch}(2n \operatorname{Arsh} t)$	$pO_{2n}(p)$
8.9	$\operatorname{sh}(\nu \operatorname{Arsh} t)$	$\nu S_{0,\nu}(p)$
8.10	$\operatorname{ch}(\nu \operatorname{Arsh} t)$	$S_{1,\nu}(p)$
8.11	$\operatorname{sh}\left[\nu \operatorname{Arch}\left(1+\dfrac{t}{\alpha}\right)\right]$, $\lvert\arg\alpha\rvert<\pi$	$\nu e^{\alpha p}K_\nu(\alpha p)$
8.12	$\dfrac{\exp(n \operatorname{Arsh} t)}{\sqrt{t^2+1}}$	$\dfrac{p}{2}[S_n(p)-\pi\,\mathbf{E}_n(p)-\pi Y_n(p)]$
8.13	$\dfrac{\exp(-n \operatorname{Arsh} t)}{\sqrt{t^2+1}}$	$(-1)^{n+1}\dfrac{p}{2}[S_n(p)+\pi\,\mathbf{E}_n(p)+\pi Y_n(p)]$
8.14	$\dfrac{\exp(-\nu \operatorname{Arsh} t)}{\sqrt{t^2+1}}$	$\pi\csc(\nu\pi)\,p\,[\mathbf{J}_\nu(p)-J_\nu(p)]$
8.15	$\dfrac{\operatorname{sh}(\nu \operatorname{Arsh} t)}{\sqrt{t^2+1}}$	$\nu p S_{-1,\nu}(p)$
8.16	0 при $0<t<a$; $\dfrac{\operatorname{ch}(n \operatorname{Arsh} t)}{\sqrt{t^2+1}}$ при $t>a$	$pS_n(\operatorname{Arsh} a,\ p)$
8.17	$\dfrac{\operatorname{ch}(\nu \operatorname{Arsh} t)}{\sqrt{t^2+1}}$	$pS_{0,\nu}(p)$

4 Зак. 1125

№	$f(t)$	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
8.18	0 при $0<t<a$ $\dfrac{\operatorname{ch}(n\operatorname{Arch}t)}{\sqrt{t^2-1}}$ при $t>a>1$	$pC_n(\operatorname{Arch}a,\ p)$
8.19	$\dfrac{\operatorname{ch}\left[\nu\operatorname{Arch}\left(1+\dfrac{t}{\alpha}\right)\right]}{\sqrt{t^2+\alpha t}}$ $\lvert\arg\alpha\rvert<\pi$	$pe^{\alpha p}K_\nu(\alpha p)$
8.20	$\dfrac{\exp\left[2\nu\operatorname{Arsh}\left(\dfrac{t}{2a}\right)\right]}{\sqrt{t^3+4a^2t}}$, $\operatorname{Re}a>0$	$\left(\dfrac{\pi p}{2}\right)^{\frac{3}{2}}[J_{\nu+\frac{1}{4}}(ap)J_{\nu-\frac{1}{4}}(ap)+$ $+Y_{\nu+\frac{1}{4}}(ap)Y_{\nu-\frac{1}{4}}(ap)]$
8.21	$\dfrac{\exp\left[-2\nu\operatorname{Arsh}\left(\dfrac{t}{2a}\right)\right]}{\sqrt{t^3+4a^2t}}$ $\operatorname{Re}a>0$	$\left(\dfrac{\pi p}{2}\right)^{\frac{3}{2}}[J_{\nu+\frac{1}{4}}(ap)Y_{\nu-\frac{1}{4}}(ap)-$ $-J_{\nu-\frac{1}{4}}(ap)Y_{\nu+\frac{1}{4}}(ap)]$
8.22	$\Big\{\cos\left[\left(\nu+\dfrac{1}{4}\right)\right]\pi\times$ $\times\exp\left[-2\nu\operatorname{Arsh}\left(\dfrac{t}{2a}\right)\right]+$ $+\sin\left[\left(\nu+\dfrac{1}{4}\right)\pi\right]\times$ $\times\exp\left[2\nu\operatorname{Arsh}\left(\dfrac{t}{2a}\right)\right]\Big\}\times$ $\times\dfrac{1}{\sqrt{t^3+4a^2t}}$ $\operatorname{Re}a>0$	$\left(\dfrac{\pi p}{2}\right)^{\frac{3}{2}}[J_{\frac{1}{4}+\nu}(ap)J_{\frac{1}{4}-\nu}(ap)+$ $+Y_{\frac{1}{4}+\nu}(ap)Y_{\frac{1}{4}-\nu}(ap)]$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
8.23	$\left\{\sin\left[\left(\nu+\frac{1}{4}\right)\pi\right]\times\exp\left[-2\nu\,\mathrm{Arsh}\left(\frac{t}{2a}\right)\right]-\cos\left[\left(\nu+\frac{1}{4}\right)\pi\right]\times\exp\left[2\nu\,\mathrm{Arsh}\left(\frac{t}{2a}\right)\right]\right\}\times\frac{1}{\sqrt{t^3+4a^2t}}$, $\mathrm{Re}\,a>0$	$\left(\frac{\pi p}{2}\right)^{\frac{3}{2}}\left[J_{\frac{1}{4}+\nu}(ap)\,Y_{\frac{1}{4}-\nu}(ap)-J_{\frac{1}{4}-\nu}(ap)\,Y_{\frac{1}{4}+\nu}(ap)\right]$
8.24	$\frac{\mathrm{sh}\left[2\nu\,\mathrm{Arsh}\left(\frac{t}{2a}\right)\right]}{\sqrt{t^3+4a^2t}}$, $\|\arg a\|<\pi$	$\frac{(\pi p)^{\frac{3}{2}}}{8i}\left[e^{\nu\pi i}H^{(1)}_{\frac{1}{2}+\nu}(ap)\,H^{(2)}_{\frac{1}{2}-\nu}(ap)-e^{-\nu\pi i}H^{(1)}_{\frac{1}{2}-\nu}(ap)\,H^{(2)}_{\frac{1}{2}+\nu}(ap)\right]$
8.25	$\frac{\mathrm{ch}\left[2\nu\,\mathrm{Arsh}\left(\frac{t}{2\alpha}\right)\right]}{\sqrt{t^3+4\alpha^2t}}$, $\|\arg\alpha\|<\pi$	$\frac{(\pi p)^{\frac{3}{2}}}{8}\left[e^{\nu\pi i}H^{(1)}_{\frac{1}{2}+\nu}(\alpha p)\,H^{(2)}_{\frac{1}{2}-\nu}(ap)+e^{-\nu\pi i}H^{(1)}_{\frac{1}{2}-\nu}(\alpha p)\,H^{(2)}_{\frac{1}{2}+\nu}(\alpha p)\right]$
8.26	0 при $0<t<2a$; $\frac{\mathrm{ch}\left[2\nu\,\mathrm{Arch}\left(\frac{t}{2a}\right)\right]}{\sqrt{t^3-4a^2t}}$ при $t>2a$	$\frac{p^{\frac{3}{2}}}{\sqrt{2\pi}}K_{\nu+\frac{1}{4}}(ap)\,K_{\nu-\frac{1}{4}}(ap)$
8.27	$\frac{\mathrm{ch}\left[2\nu\,\mathrm{Arch}\left(1+\frac{t}{2a}\right)\right]}{\sqrt{t(t+2a)(t+4a)}}$, $\|\arg a\|<\pi$	$\frac{p^{\frac{3}{2}}}{\sqrt{2\pi}}e^{2ap}K_{\nu+\frac{1}{4}}(ap)\,K_{\nu-\frac{1}{4}}(ap)$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
7.28	$e^{-bt}\operatorname{Arch}\frac{t}{a}$ при $t>a$ 0 при $0<t<a$	$\frac{p}{p+b}K_0[a(p+b)]$
8.29	$\sqrt{1+t^2}-t\operatorname{Arsh}t$	$\frac{1}{p}S_{2,0}(p)$
8.30	$1+\left(\nu-\frac{1}{\nu}\right)\int_0^t \operatorname{sh}(\nu\operatorname{Arsh}\tau)\,d\tau$	$\frac{1}{p}S_{2,\nu}(p)$

§ 9. Ортогональные многочлены

№	$f(t)$	$\bar{f}(p)$
9.1	$\operatorname{He}_n(t)$	$\frac{n!}{p^n}\sum_{m=0}^{n}\frac{(-1)^m}{m!}\left(\frac{p^2}{2}\right)^m$
9.2	$\operatorname{He}_{2n+1}(\sqrt{t})$	$\frac{(2n+1)!\sqrt{\pi}}{2^{n+1}n!\,p^{n+\frac{1}{2}}}\left(\frac{1}{2}-p\right)^n$
9.3	$\frac{\operatorname{He}_{2n}(\sqrt{t})}{\sqrt{t}}$	$\frac{(2n)!}{n!}\frac{\sqrt{\pi}}{2^n}\frac{\left(\frac{1}{2}-p\right)^n}{p^{n-\frac{1}{2}}}$
9.4	$t^{\alpha-1}\operatorname{He}_n(t)$ $\operatorname{Re}\alpha>\begin{cases}0 & \text{при } n \text{ четном}\\ -1 & \text{при } n \text{ нечетном}\end{cases}$	$\frac{1}{p^{\alpha+n-1}}\sum_{m=0}^{\left[\frac{n}{2}\right]}\frac{n!\,\Gamma(\alpha+n-2m)}{m!\,(n-2m)!}\times$ $\times\left(-\frac{1}{2}\right)^m p^{2m}$ $\left[\frac{n}{2}\right]=\begin{cases}\frac{n}{2} & \text{при } n \text{ четном}\\ \frac{n}{2}-\frac{1}{2} & \text{при } n \text{ нечетном}\end{cases}$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
9.5	$t^{\alpha-\frac{1}{2}n-1}\,\mathrm{He}_n(\sqrt{t})$ $\mathrm{Re}\,\alpha>\begin{cases}\frac{n}{2} & \text{при } n \text{ четном}\\ \frac{n}{2}-\frac{1}{2} & \text{при } n \text{ нечетном}\end{cases}$	$\Gamma(\alpha)\,p^{1-\alpha}\,{}_2F_1\left(-\frac{n}{2};\ \frac{1-n}{2};\ 1-\alpha;\ 2p\right)$ Если α — целое, то берутся первые $1+\left[\frac{n}{2}\right]$ членов ряда
9.6	$e^{\beta t}\,\mathrm{He}_{2n+1}[\sqrt{2(\alpha-\beta)t}]$	$(-2)^{-n}\left(\frac{\pi}{2}\right)^{\frac{1}{2}}(\alpha-\beta)^{\frac{1}{2}}\frac{(2n+1)!}{n!}\times$ $\times\,p\,\frac{(p-\alpha)^n}{(p-\beta)^{n+\frac{3}{2}}},\quad \mathrm{Re}\,p>\mathrm{Re}\,\beta$
9.7	$\frac{e^{\beta t}\,\mathrm{He}_{2n}(\sqrt{2(\alpha-\beta)t})}{\sqrt{t}}$	$(-2)^{-n}\sqrt{\pi}\,\frac{(2n)!}{n!}\,p\,\frac{(p-\alpha)^n}{(p-\beta)^{n+\frac{1}{2}}}$ $\mathrm{Re}\,p>\mathrm{Re}\,\beta$
9.8	$\frac{1}{\sqrt{t}}\left\{\mathrm{He}_n\left(\frac{a+\sqrt{t}}{\lambda}\right)+\right.$ $\left.+\mathrm{He}_n\left(\frac{a-\sqrt{t}}{\lambda}\right)\right\}$	$\sqrt{2\pi p}\left(1-\frac{1}{2\lambda^2 p}\right)^{\frac{1}{2}n}\times$ $\times\,\mathrm{He}_n\left(\frac{a}{\sqrt{\lambda^2-\frac{1}{2p}}}\right)$
9.9	$t^{-\frac{1}{2}(n+1)}\,e^{-\frac{\alpha}{2t}}\,\mathrm{He}_n\left(\sqrt{\frac{\alpha}{t}}\right)$ $\mathrm{Re}\,\alpha>0$	$2^{\frac{n}{2}}\sqrt{\pi}\,p^{\frac{n+1}{2}}\exp(-\sqrt{2\alpha p})$
9.10	$\frac{1}{\sqrt{t}}\,\mathrm{He}_{2n}(\sqrt{2\alpha t})\,\mathrm{He}_{2m}(\sqrt{2\beta t})$	$\frac{\sqrt{\pi}\,(2m+2n)!}{(-2)^{m+n}(m+n)!}\,\frac{(p-\alpha)^n(p-\beta)^m}{p^{m+n-\frac{1}{2}}}\times$ $\times\,{}_2F_1\left[-m,\,-n;\,-m-n+\frac{1}{2};\ \frac{p(p-\alpha-\beta)}{(p-\alpha)(p-\beta)}\right]$

№	$f(t)$	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
9.11	$\frac{1}{\sqrt{\alpha\beta t}}\,\mathrm{He}_{2n+1}(\sqrt{2\alpha t})\times$ $\times\,\mathrm{He}_{2m+1}(\sqrt{2\beta t})$	$\frac{-\sqrt{\pi}\,(2m+2n+2)!}{(-2)^{m+n+1}\,(m+n+1)!}\times$ $\times\frac{(p-\alpha)^n\,(p-\beta)^m}{p^{m+n+\frac{1}{2}}}\times$ $\times\,{}_2F_1\left[-m,\ -n;\ -m-n-\frac{1}{2};\ \frac{p\,(p-\alpha-\beta)}{(p-\alpha)\,(p-\beta)}\right]$
9.12	$\frac{\exp[-(\alpha+\beta)\,t]}{\sqrt{t}}\,\mathrm{He}_n(2\sqrt{\alpha t})\times$ $\times\,\mathrm{He}_n(2\sqrt{\beta t})$	$\sqrt{\pi}\,n!\,p\,\frac{(\alpha+\beta-p)^{\frac{n}{2}}}{(\alpha+\beta+p)^{\frac{n}{2}+\frac{1}{2}}}\times$ $\times\,P_n\left\{2\sqrt{\frac{\alpha\beta}{(\alpha+\beta)^2-p^2}}\right\}$ $\mathrm{Re}\,(\alpha+\beta+p)>0$
9.13	$\frac{1}{\sqrt{t}}\left\{\mathrm{He}_m\left(\frac{x+\sqrt{t}}{\lambda}\right)\times\right.$ $\times\,\mathrm{He}_n\left(\frac{y+\sqrt{t}}{\mu}\right)+$ $\left.+\mathrm{He}_m\left(\frac{x-\sqrt{t}}{\lambda}\right)\mathrm{He}_n\left(\frac{y-\sqrt{t}}{\mu}\right)\right\}$	$\frac{\sqrt{\pi}}{\lambda^m\mu^n\,(2p)^{\frac{1}{2}m+\frac{1}{2}n-\frac{1}{2}}}\times$ $\times\sum\limits_{k=0}^{\min(m,\,n)}\left\{\binom{m}{k}\binom{n}{k}k!\times\right.$ $\times\,(2\lambda^2p-1)^{\frac{m+k}{2}}\,(2\mu^2p-1)^{\frac{n+k}{2}}\times$ $\times\,\mathrm{He}_{m-k}\left(\frac{x}{\sqrt{\lambda^2-\frac{1}{2p}}}\right)\times$ $\left.\times\,\mathrm{He}_{n-k}\left(\frac{y}{\sqrt{\mu^2-\frac{1}{2p}}}\right)\right\}$
9.14	$\frac{\mathrm{He}_{2n}\left(\sqrt{a\,(1-e^{-t})}\right)}{\sqrt{e^t-1}}$	$\frac{(-2)^n\sqrt{\pi}\,(2n)!\,p\,\Gamma\left(p+\frac{1}{2}\right)}{\Gamma\,(p+n+1)}\times$ $\times\,L_n^{(p)}\left(\frac{a}{2}\right),\quad \mathrm{Re}\,p>-\frac{1}{2}$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
9.15	$\mathrm{He}_{2n+1}\left(\sqrt{a(1-e^{-t})}\right)$	$\frac{(-2)^n\sqrt{\pi}\,(2n+1)!\,p\Gamma(p)}{\Gamma\left(p+n+\frac{3}{2}\right)}\times$ $\times\sqrt{a}\,L_n^{(p)}\left(\frac{a}{2}\right)$
9.16	$L_n(t)$	$\left(1-\frac{1}{p}\right)^n$
9.17	$t^n L_n(t)$	$\frac{n!}{p^n}P_n\left(1-\frac{2}{p}\right)$
9.18	$e^{-t}L_n(t)$	$\left(\frac{p}{p+1}\right)^{n+1}$
9.19	$e^{-\frac{t}{2}}L_n(t)$	$\frac{2p}{2p+1}\left(\frac{2p-1}{2p+1}\right)^n$
9.20	$L_n^{(\alpha)}(t)$	$\sum_{m=0}^{n}\binom{\alpha+m-1}{m}\frac{(p-1)^{n-m}}{p^{n-m}}$
9.21	$t^\alpha L_n^{(\alpha)}(t),\quad \mathrm{Re}\,\alpha>-1$	$\frac{\Gamma(\alpha+n+1)}{n!}\frac{(p-1)^n}{p^{\alpha+n}}$
9.22	$t^\beta L_n^{(\alpha)}(t),\quad \mathrm{Re}\,\beta>-1$	$\frac{\Gamma(\beta+n+1)}{n!}\frac{(p-1)^n}{p^{\beta+n}}\times$ $\times\,{}_2F_1\left(-n,\ \alpha-\beta;\ -\beta-n;\ \frac{p}{p-1}\right)$
9.23	$t^{2\alpha}[L_n^{(\alpha)}(t)]^2,\quad \mathrm{Re}\,\alpha>-\frac{1}{2}$	$\frac{2^{2\alpha}\,\Gamma\left(\alpha+\frac{1}{2}\right)\Gamma\left(n+\frac{1}{2}\right)}{\pi\,(n!)^2\,p^{2\alpha}}\times$ $\times\,{}_2F_1\left[-n,\ \alpha+\frac{1}{2};\ \frac{1}{2}\ -n;\ \left(1-\frac{2}{p}\right)^2\right]$
9.24	$t^\alpha e^{\lambda t}L_n^{(\alpha)}(bt),\quad \mathrm{Re}\,\alpha>-1$	$\frac{\Gamma(\alpha+n+1)}{n!}\frac{p\,(p-b-\lambda)^n}{(p-\lambda)^{\alpha+n+1}}$ $\mathrm{Re}\,(p-\lambda)>0$

№	$f(t)$	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
9.25	$e^{-t}\sum\limits_{m=0}^{n} a_{mn}L_m(2t)$, $P_n(z)=\sum\limits_{m=0}^{n} a_{mn}z^m$	$\frac{p}{p+1}P_n\left(\frac{p-1}{p+1}\right)$; $\operatorname{Re} p>-1$
9.26	$\sum\limits_{m=0}^{\infty}\frac{L_m(t)}{m!}=eJ_0(2\sqrt{t})$	$e^{1-\frac{1}{p}}$
9.27	$e^{-t}\sum\limits_{m=0}^{\infty}(-1)^m L_{2m}(2t)$	$\frac{p^2+p}{2(p^2+1)}$
9.28	$t^\alpha\sum\limits_{m=0}^{\infty}\frac{L_m^{(\alpha)}(t)}{\Gamma(\alpha+m+1)}$	$\frac{e^{1-\frac{1}{p}}}{p^\alpha}$, $\operatorname{Re}\alpha>-1$
9.29	$\sum\limits_{m=0}^{\infty}\frac{(-1)^m m!\,t^\alpha L_m^{(\alpha)}(t)}{\Gamma(\alpha+m+1)}$	$\frac{1}{2p^{\alpha-1}\left(p-\frac{1}{2}\right)}$, $\operatorname{Re}\alpha>-1$
9.30	$e^{-t}t^\alpha\sum\limits_{m=0}^{\infty}\frac{(-1)^m(2m)!\,L_{2m}(2t)}{\Gamma(2m+\alpha+1)}$	$\frac{p}{2(p+1)^{\alpha-1}(p^2+1)}$, $\operatorname{Re}\alpha>-1$
9.31	$\frac{1}{t^n}\exp\left(-\frac{\lambda}{t}\right)L_n^{(\alpha)}\left(\frac{\lambda}{t}\right)$, $\operatorname{Re}\lambda>0$	$(-1)^n\left(\frac{2}{n!}\right)\lambda^{-\frac{\alpha}{2}}p^{\frac{\alpha}{2}+n+1}\times$ $\times K_\alpha(2\sqrt{\lambda p})$
9.32	$L_n(\lambda t)L_n(\mu t)$	$\frac{(p-\lambda-\mu)^n}{p^n}\times$ $\times P_n\left[\frac{p^2+(\lambda+\mu)p+2\lambda\mu}{p(p-\lambda-\mu)}\right]$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt} f(t)\,dt$
9.33	$t^\alpha L_n^{(\alpha)}(\lambda t)\, L_m^{(\alpha)}(\mu t)$, $\operatorname{Re}\alpha>-1$	$\frac{\Gamma(m+n+\alpha+1)}{m!\,n!}\frac{(p-\lambda)^n(p-\mu)^m}{p^{m+n+\alpha}}\times$ $\times\,{}_2F_1\left[-m,\ -n;\ -m-n-\alpha;\ \frac{p(p-\lambda-\mu)}{(p-\lambda)(p-\mu)}\right]$
9.34	$t^{2\alpha}L_n^{(\alpha)}(\lambda t)\, L_n^{(\alpha)}(\mu t)$, $\operatorname{Re}\alpha>-\frac{1}{2}$	$\frac{\Gamma(2\alpha+1)\,\Gamma(n+\alpha+1)}{n!\,p^{2\alpha}}\times$ $\times\sum\limits_{m=0}^{\infty}\left\{\frac{(-1)^m\left(1-\frac{\lambda+\mu}{2p}\right)^{n-m}}{m!\,\Gamma(\alpha-m+1)}\times\right.$ $\times\, C_{n+m}^{\alpha+\frac{1}{2}}\left[\frac{p^2+(\lambda+\mu)p+2\lambda\mu}{p(p-\lambda-\mu)}\right]$
9.35	$(-i)^n T_n(it)$	$pO_n(p)$
9.36	$\frac{2(-i)^{n-1}U_n(it)}{\sqrt{t^2+1}}$	$pS_n(p)$
9.37	$e^{-\frac{t}{2}}\, t^m T_m^{(n)}(t)$	$\frac{p\left(\frac{1}{2}-p\right)^n}{n!\left(\frac{1}{2}+p\right)^{m+n+1}}$
9.38	$t^m T_m^{(n)}(t)$	$\frac{(1-p)^n}{n!\,p^{m+n}}$
9.39	$\Phi_m(t)$	$\left(\frac{p-1}{p}\right)^m=\left(1-\frac{1}{p}\right)^m$
9.40	$\Phi_m'(t)$	$p\left[\left(1-\frac{1}{p}\right)^{m-1}\right]$
9.41	$t\Phi_m'(t)$	$-\frac{m}{p}\left(1-\frac{1}{p}\right)^{m-1}$
9.42	$\frac{d}{dm}\Phi_m(t)$	$\left(1-\frac{1}{p}\right)^m\ln\left(1-\frac{1}{p}\right)$

№	$f(t)$	$\bar{f}(p) = p\int_0^\infty e^{-pt} f(t)\,dt$
9.43	$P_0(\cos t)$	1
9.44	$P_1(\cos t)$	$\dfrac{p^2}{p^2+1}$
9.45	$P_2(\cos t)$	$\dfrac{p^2+1}{p^2+2^2}$
9.46	$P_3(\cos t)$	$\dfrac{p^2(p^2+2^2)}{(p^2+1^2)(p^2+3^2)}$
9.47	$P_n(1-t)$	$e^{-p}p^{n+1}\left(\frac{1}{p}\frac{d}{dp}\right)^n\left(\frac{e^p}{p}\right) = p^{n+1}\left(1+\frac{1}{2}\frac{d}{dp}\right)^n\left(\frac{1}{p^{n+1}}\right)$
9.48	$P_n(e^{-t}),\quad n\geqslant 2$	$\dfrac{p(p-1)(p-2)(p-3)\ldots(p-n+1)}{(p+n)(p+n-2)\ldots(p-n+2)}$
9.49	$P_{2n}(\cos t)$	$\dfrac{(p^2+1^2)(p^2+3^2)\ldots[p^2+(2n-1)^2]}{(p^2+2^2)(p^2+4^2)\ldots[p^2+(2n)^2]}$
9.50	$P_{2n+1}(\cos t)$	$\dfrac{p^2(p^2+2^2)(p^2+4^2)\ldots[p^2+(2n)^2]}{(p^2+1^2)(p^2+3^2)\ldots[p^2+(2n+1)^2]}$
9.51	$P_{2n}(\operatorname{ch} t)$	$\dfrac{(p^2-1^2)(p^2-3^2)\ldots[p^2-(2n-1)^2]}{(p^2-2^2)(p^2-4^2)\ldots[p^2-(2n)^2]}$ $\operatorname{Re} p > 2n$
9.52	$P_{2n+1}(\operatorname{ch} t)$	$\dfrac{p^2(p^2-2^2)(p^2-4^2)\ldots[p^2-(2n)^2]}{(p^2-1^2)(p^2-3^2)\ldots[p^2-(2n+1)^2]}$ $\operatorname{Re} p > 2n+1$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
9.53	$[t(2a-t)]^{\nu-\frac{1}{2}} C_n^\nu\left(\frac{t}{a}-1\right)$ при $0<t<2a$ 0 при $t>2a$ $\operatorname{Re}\nu>-\frac{1}{2}$	$(-1)^n \frac{\pi\Gamma(2\nu+n)}{n!\,\Gamma(\nu)} p\left(\frac{a}{2p}\right)^\nu \times$ $\times e^{-ap} I_{\nu+n}(ap)$
9.54	$t^m P_n(m, t)$	$m!\,\frac{(p-1)^n}{p^m}$
9.55	$t^{\alpha-1}P_n(m, t)$, $\operatorname{Re}\alpha>\min(n, m)$	$\frac{m!\,\Gamma(\alpha-n)}{(m-n)!\,p^{\alpha-n-1}}\times$ $\times {}_2F_1\left(-n,\ \alpha-n;\ m-n+1;\ \frac{1}{p}\right)$
9.56	$t^{-\frac{n}{2}-1}\int_0^\infty e^{-\frac{x^2}{4t}} \mathrm{He}_n\left(\frac{x}{2\sqrt{t}}\right)\times$ $\times J_\nu(2\sqrt{ax})\, x^{\frac{\nu}{2}}\,dx$	$2^n\sqrt{\pi}\, a^{\frac{\nu}{2}} p^{\frac{n-\nu}{2}} \exp\left(-\frac{a}{\sqrt{p}}\right)$
9.57	$t^{\frac{\nu}{2}}\int_0^\infty e^{-\frac{a^2}{4x}} \mathrm{He}_n\left(\frac{a}{2\sqrt{x}}\right)\times$ $\times J_\nu(2\sqrt{tx})\, x^{-\frac{n+\nu+1}{2}}\,dx$	$2^n\sqrt{\pi}\, p^{-\frac{n}{2}-\nu+1} \exp\left(-\frac{a}{\sqrt{p}}\right)$
9.58	$t^{\frac{\nu}{2}}\int_0^\infty e^{-\beta x} J_\nu(2\sqrt{tx})\times$ $\times L_n^{(\alpha)}(x)\, x^{\alpha-\frac{\nu}{2}}\,dx$, $\operatorname{Re}\nu>-1$	$\frac{\Gamma(n+\alpha+1)\, p^{1-\nu+\alpha}\,[1+(\beta-1)p]^n}{n!\,[1+\beta p]^{n+\alpha-1}}$

§ 10. Гамма-функция и родственные ей функции. Интегральные функции. Вырожденные гипергеометрические функции

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
10.1	$\Gamma(\nu,\ at),\quad \mathrm{Re}\,\nu>-1$	$\Gamma(\nu)\left[1-\left(1+\frac{p}{a}\right)^{-\nu}\right]$ $\mathrm{Re}\,p>-\mathrm{Re}\,a$
10.2	$e^{at}\Gamma(\nu,\ at),\ \mathrm{Re}\,\nu>-1$	$\Gamma(\nu)\frac{p}{p-a}\left(1-\frac{a^\nu}{p^\nu}\right)$
10.3	$\Gamma\left(\nu,\ \frac{a}{t}\right),\ \lvert\arg a\rvert<\frac{\pi}{2}$	$2a^{\frac{\nu}{2}}p^{\frac{\nu}{2}}K_\nu(2\sqrt{ap})$
10.4	$t^{\mu-1}e^{\frac{a}{t}}\Gamma\left(\nu,\ \frac{a}{t}\right)$ $\mathrm{Re}(\nu-\mu)<1,\ \lvert\arg a\rvert<\pi$	$2^{1+\mu-2\nu}\Gamma(1+\mu-\nu)a^{\frac{\mu}{2}}p^{1-\frac{\mu}{2}}\times$ $\times S_{2\nu-\mu-1,\mu}(2\sqrt{ap})$
10.5	$e^{bt}\gamma(\nu,\ at),\ \mathrm{Re}\,\nu>-1$	$a^\nu\Gamma(\nu)\frac{p}{p-b}(p+a-b)^{-\nu},$ $\mathrm{Re}\,p>\mathrm{Re}\,b,\ \mathrm{Re}\,(b-a)$
10.6	$\gamma\left(\frac{1}{4},\ \frac{t^2}{8a^2}\right),\ \lvert\arg a\rvert<\frac{\pi}{4}$	$2^{\frac{3}{4}}\sqrt{ap}\,e^{a^2p^2}K_{\frac{1}{4}}(a^2p^2)$
10.7	$\gamma\left(\nu,\ \frac{t^2}{8a^2}\right),\ \lvert\arg a\rvert<\frac{\pi}{4}$ $\mathrm{Re}\,\nu>-\frac{1}{2}$	$2^{-\nu-1}\Gamma(2\nu)e^{a^2p^2}D_{-2\nu}(2ap)$
10.8	$\exp\left(-\frac{t^2}{4a}\right)\gamma\left(\nu,\ e^{i\pi}\frac{t^2}{4a}\right)$ $\lvert\arg a\rvert<\frac{\pi}{2},\ \mathrm{Re}\,\nu>-\frac{1}{2}$	$2^{1-2\nu}\Gamma(2\nu)\sqrt{a}\,pe^{\nu\pi i+ap^2}\times$ $\times\Gamma\left(\frac{1}{2}-\nu,\ ap^2\right)$
10.9	$\mathrm{erf}(t)$	$e^{\frac{p^2}{4}}\mathrm{erfc}\,\frac{p}{2}$
10.10	$\mathrm{erf}\left(\frac{a}{2\sqrt{t}}\right)$	$1-e^{-a\sqrt{p}}$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
10.11	$\operatorname{erf}(\sqrt{t})$	$\frac{1}{\sqrt{p+1}}$
10.12	$e^{-\alpha^2t^2}\operatorname{erf}(i\alpha t),\ \lvert\arg\alpha\rvert<\frac{\pi}{4}$	$(2\alpha i\sqrt{\pi})^{-1}\,pe^{\frac{p^2}{4\alpha^2}}\operatorname{Ei}\left(-\frac{p^2}{4\alpha^2}\right)$
10.13	$e^{\alpha t}\operatorname{erf}(\sqrt{\alpha t})$	$\frac{\sqrt{\alpha p}}{p-\alpha}$
10.14	$e^{-t}\operatorname{erf}\sqrt{t}$	$\frac{p}{(p+1)\sqrt{p+2}}$
10.15	$e^{t+\frac{1}{4}}\left[\operatorname{erf}\left(t+\frac{1}{2}\right)-\operatorname{erf}\left(\frac{1}{2}\right)\right]$	$\frac{e^{\frac{p^2}{4}}}{p+1}\operatorname{erfc}\frac{p}{2}$
10.16	$a\sqrt{\frac{t}{\pi}}e^{-\frac{a^2}{4t}}+\left(t+\frac{a^2}{2}\right)\operatorname{erf}\left(\frac{a}{2\sqrt{t}}\right)-\frac{a^2}{2}$	$\frac{1-e^{-a\sqrt{p}}}{p}$
10.17	$e^{\frac{t}{a^2}}\left[1-\operatorname{erf}\left(\frac{\sqrt{t}}{a}\right)\right]$	$\frac{a\sqrt{p}}{1+a\sqrt{p}}$
10.18	$\frac{e^{-t}}{\sqrt{\pi t}}+\operatorname{erf}(\sqrt{t})$	$\sqrt{p+1}$
10.19	$e^{-at}\operatorname{erf}(\sqrt{(b-a)t})$	$\sqrt{b-a}\,\frac{p}{(p+a)\sqrt{p+b}}$
10.20	$\frac{e^{-at}}{\sqrt{\pi t}}+\sqrt{a-b}\,e^{-bt}\operatorname{erf}(\sqrt{(a-b)t})$	$\frac{p\sqrt{p+a}}{p+b}$
10.21	$\operatorname{erfc}\left(\frac{t}{2\alpha}\right),\ \lvert\arg\alpha\rvert<\frac{\pi}{4}$	$1-e^{\alpha^2p^2}\operatorname{erfc}(\alpha p)$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
10.22	$e^{-\alpha^2 t^2}\operatorname{erfc}(i\alpha t)$	$\frac{\sqrt{\pi}}{2\alpha}\,pe^{\frac{p^2}{4\alpha^2}}\left[\operatorname{erfc}\left(\frac{p}{2\alpha}\right)+\right.$ $\left.+\frac{i}{\pi}\operatorname{Ei}\left(-\frac{p^2}{4\alpha^2}\right)\right]$
10.23	$\operatorname{erfc}(\sqrt{\alpha t})$	$\frac{\sqrt{p+\alpha}-\sqrt{\alpha}}{\sqrt{p+\alpha}}$, $\operatorname{Re} p>-\operatorname{Re}\alpha$
10.24	$e^{\alpha t}\operatorname{erfc}(\sqrt{\alpha t})$	$\frac{\sqrt{p}}{\sqrt{p}+\sqrt{\alpha}}$
10.25	$\operatorname{erfc}\left(\frac{1}{2}\sqrt{\frac{\alpha}{t}}\right)$, $\operatorname{Re}\alpha>0$	$\exp(-\sqrt{\alpha p})$
10.26	$e^{\alpha t}\operatorname{erfc}\left(\sqrt{\alpha t}+\frac{1}{2}\sqrt{\frac{\beta}{t}}\right)$, $\operatorname{Re}\beta>0$	$\frac{\sqrt{p}}{\sqrt{p}+\sqrt{\alpha}}\exp(-\sqrt{\alpha\beta}-\sqrt{\beta p})$
10.27	$2\sqrt{\frac{t}{\pi}}\,e^{-\frac{a^2}{4t}}-a\operatorname{erfc}\left(\frac{a}{2\sqrt{t}}\right)$	$\frac{e^{-a\sqrt{p}}}{\sqrt{p}}$
10.28	$\frac{1}{\sqrt{\pi t}}-e^t\operatorname{erfc}\sqrt{t}$	$\frac{p}{\sqrt{p}+1}$
10.29	$1-e^{\frac{a^2}{b^2}t}\operatorname{erfc}\left(\frac{a}{b}\sqrt{t}\right)$	$\frac{1}{a+b\sqrt{p}}$
10.30	$e^{-t}\operatorname{erfc}\left(\frac{1}{2\sqrt{t}}\right)$	$\frac{p}{p+1}\,e^{-\sqrt{p+1}}$
10.31	$S(t)$	$\frac{\sqrt{\sqrt{p^2+1}-p}}{2\sqrt{p^2+1}}$
10.32	$C(t)$	$\frac{\sqrt{\sqrt{p^2+1}+p}}{2\sqrt{p^2+1}}$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
10.33	$S(\sqrt{t})$	$\frac{1}{2}-\cos\left(\frac{p^2}{4}\right)C\left(\frac{p^2}{4}\right)-$ $-\sin\left(\frac{p^2}{4}\right)S\left(\frac{p^2}{4}\right)$
10.34	$C(\sqrt{t})$	$\frac{1}{2}\cos\left(\frac{p^2}{4}\right)-\cos\left(\frac{p^2}{4}\right)S\left(\frac{p^2}{4}\right)+$ $+\sin\left(\frac{p^2}{4}\right)C\left(\frac{p^2}{4}\right)$
10.35	$tS(t)$	$\frac{\sqrt{\sqrt{p^2+1}-p}}{2p\sqrt{p^2+1}}\left(\frac{p}{2\sqrt{p^2+1}}+\right.$ $\left.+\frac{p^2}{p^2+1}+1\right)$
10.36	$\mathrm{Si}(t)$	$\mathrm{arcctg}\,p$
10.37	$\mathrm{si}(t)$	$-\mathrm{arctg}\,p$
10.38	$\mathrm{Ci}(t)=-\mathrm{ci}(t)$	$\frac{1}{2}\ln(p^2+1)$
10.39	$\mathrm{Si}(t^2)$	$\pi p\left[\frac{1}{2}-C\left(\frac{p^2}{4}\right)\right]^2+$ $+\pi p\left[\frac{1}{2}-S\left(\frac{p^2}{4}\right)\right]^2$
10.40	$\mathrm{si}(t^2)+\frac{\pi}{2}$	$\pi\left[C\left(\frac{p^2}{4}\right)-\frac{1}{2}\right]^2+$ $+\pi\left[S\left(\frac{p^2}{4}\right)-\frac{1}{2}\right]^2$
10.41	$\cos t\,\mathrm{Si}(t)-\sin t\,\mathrm{Ci}(t)$	$\frac{p}{p^2+1}\ln p$
10.42	$\cos t\,\mathrm{Ci}(t)+\sin t\,\mathrm{Si}(t)$	$-\frac{p^2}{p^2+1}\ln p$
10.43	$\mathrm{Ei}(t)$	$-\ln(p-1)$
10.44	$\mathrm{Ei}(-t)$	$-\ln(p+1)$

№	$f(t)$	$\bar{f}(p) = p\int_0^\infty e^{-pt} f(t)\,dt$
10.45	$\dfrac{\mathrm{Ei}(-t)}{\sqrt{t}}$	$-2\sqrt{\pi p}\ln(\sqrt{p}+\sqrt{p+1})$
10.46	$\sin(at)\,\mathrm{Ei}(-t)$	$-\dfrac{p}{p^2+a^2}\left\{\dfrac{a}{2}\ln[(p+1)^2+a^2]-\right.$ $\left.-p\,\mathrm{arctg}\left(\dfrac{a}{p+1}\right)\right\}$ $\mathrm{Re}\,p>\|\mathrm{Im}\,a\|$
10.47	$\cos(at)\,\mathrm{Ei}(-t)$	$-\dfrac{p}{p^2+a^2}\left\{\dfrac{p}{2}\ln[(p+1)^2+a^2]+\right.$ $\left.+a\,\mathrm{arctg}\left(\dfrac{a}{p+1}\right)\right\}$ $\mathrm{Re}\,p>\|\mathrm{Im}\,a\|$
10.48	$\overline{\mathrm{Ei}}(t)$	$-\ln(p-1),\quad \mathrm{Re}\,p>1$
10.49	$\mathrm{li}(e^t)$	$-\ln(p-1),\quad \mathrm{Re}\,p>1$
10.50	$\mathrm{li}(e^{-t})$	$-\ln(p+1)$
10.51	$\ln\alpha-\mathrm{Ei}(\alpha t),\ \mathrm{Re}\,\alpha>0$	$\ln(p-\alpha)$
10.52	$\ln\alpha-\mathrm{Ei}(-\alpha t),\ \mathrm{Re}\,\alpha>0$	$\ln(p+\alpha)$
10.53	$\mathrm{shi}(at)$	$\dfrac{1}{2}\ln\dfrac{p+a}{p-a}$
10.54	$Ji_0(\alpha t)+\ln\alpha$	$\ln(p+\sqrt{p^2+\alpha^2})$
10.55	$Ii_0(\alpha t)+\ln\alpha+i\dfrac{\pi}{2}$	$\ln(p+\sqrt{p^2-\alpha^2})$
10.56	$Ji_\nu(t),\ \mathrm{Re}\,\nu>0$	$\dfrac{1}{\nu}(\sqrt{p^2+1}-p)^\nu-\dfrac{1}{\nu}$
10.57	$Ji_0(2\sqrt{t})$	$\dfrac{1}{2}\mathrm{Ei}\left(-\dfrac{1}{p}\right)$
10.58	$t^\nu\exp\left(\dfrac{t^2}{4}\right)D_{-\mu}(t),\ \mathrm{Re}\,\nu>-1$	$\dfrac{\Gamma(\nu+1)}{\Gamma(\mu)}\,p\int_0^\infty x^{\mu-1}(p+x)^{-\nu-1}\times$ $\times e^{-\frac{x^2}{2}}dx$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
10.59	$\exp\left(-\frac{t^2}{4a}\right)\left[D_{-2\nu}\left(-\frac{t}{a}\right)-D_{-2\nu}\left(\frac{t}{a}\right)\right]$	$\sqrt{2\pi}(ap)^{1-2\nu}e^{\frac{1}{2}a^2p^2}\times\frac{\Gamma\left(\nu,\ \frac{1}{2}a^2p^2\right)}{\Gamma(\nu)}$
10.60	$D_{2n+1}(\sqrt{2t})$	$(-2)^n\,\Gamma\left(n+\frac{3}{2}\right)p\left(p-\frac{1}{2}\right)^n\times\left(p+\frac{1}{2}\right)^{-n-\frac{3}{2}}$, $\operatorname{Re}p>-\frac{1}{2}$
10.61	$D_{2\nu}(-2\sqrt{at})-D_{2\nu}(2\sqrt{at})$	$\frac{2^{\nu+\frac{3}{2}}\pi\sqrt{a}}{\Gamma(-\nu)}\frac{p(p-a)^{\nu-\frac{1}{2}}}{(p+a)^{\nu+1}}$ $\operatorname{Re}p>\lvert\operatorname{Re}a\rvert$
10.62	$\frac{D_{2n}(2\sqrt{t})}{\sqrt{t}}$	$\sqrt{\pi}\frac{(2n)!}{2^n n!}\frac{p(1-p)^n}{(1+p)^{n+\frac{1}{2}}}$
10.63	$\frac{D_{2\nu}(2\sqrt{at})+D_{2\nu}(-2\sqrt{at})}{\sqrt{t}}$	$\frac{2^{\nu+1}\pi p(p-a)^{\nu}(p+a)^{-\nu-\frac{1}{2}}}{\Gamma\left(\frac{1}{2}-\nu\right)}$ $\operatorname{Re}p>\lvert\operatorname{Re}a\rvert$
10.64	$t^{-\frac{1}{2}\nu-\frac{1}{2}}e^{\frac{t}{4}}D_{\nu}(\sqrt{t})$, $\operatorname{Re}\nu<1$	$\sqrt{\pi p}(1+\sqrt{2p})^{\nu}$
10.65	$t^{-\frac{\nu}{2}-\frac{3}{2}}e^{\frac{t}{4}}D_{\nu}(\sqrt{t})$, $\operatorname{Re}\nu<-1$	$-\frac{\sqrt{2\pi}}{\nu+1}p(1+\sqrt{2p})^{\nu+1}$
10.66	$t^{\nu-1}e^{\frac{t}{4}}D_{2\nu+2n-1}(\sqrt{t})$, $\operatorname{Re}\nu>0$	$\frac{\sqrt{\pi}\,\Gamma(2n+2\nu)}{2^{2n-\frac{1}{2}+\nu}n!}\frac{(1-2p)^n}{p^{n+\nu-1}}\times{}_2F_1\left(n+\nu,\frac{1}{2}-\nu;\ n+1;\ 1-\frac{1}{2p}\right)$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
10.67	$t^{\nu-1}e^{\frac{t}{4}}D_{2\mu-1}(\sqrt{t})$ $\operatorname{Re}\nu>0,\ \operatorname{Re}(\nu-\mu)>-1$	$\sqrt{\pi}\,\Gamma(2\nu)\,2^{-\frac{\mu}{2}-\frac{\nu}{2}+\frac{1}{2}}\times$ $\times p^{-\frac{\mu}{2}-\frac{\nu}{2}+1}(2p-1)^{\frac{\mu}{2}-\frac{\nu}{2}}\times$ $\times P^{\mu-\nu}_{\mu+\nu-1}\left(\frac{1}{\sqrt{2p}}\right)$
10.68	$[D_{-n-1}(-i\sqrt{2t})]^2-$ $-[D_{-n-1}(i\sqrt{2t})]^2$	$\frac{2\pi i}{n!}\sqrt{p}\,\frac{(p-1)^n}{(p+1)^{n+1}}$
10.69	$t^{-\nu}e^{-\frac{a}{8t}}D_{2\nu-1}\left(\sqrt{\frac{a}{2t}}\right)$ $\operatorname{Re}a>0$	$2^{\nu-\frac{1}{2}}\sqrt{\pi}\,p^{\nu}\exp(-\sqrt{ap})$
10.70	$\frac{e^{\frac{t}{2}}}{(e^t-1)^{\mu+\frac{1}{2}}}\exp\left(-\frac{a}{1-e^{-t}}\right)\times$ $\times D_{2\mu}\left(2\sqrt{\frac{a}{1-e^{-t}}}\right),\quad \operatorname{Re}a>0$	$e^{-a}2^{p+\mu}p\,\Gamma(p+\mu)\,D_{-2p}(2\sqrt{a})$ $\operatorname{Re}p>-\operatorname{Re}\mu$
10.71	$\frac{D_n(2\sqrt{at})\,D_n(2\sqrt{bt})}{\sqrt{t}}$	$\frac{n!\sqrt{\pi}\,p}{\sqrt{p+a+b}}\left(\frac{a+b-p}{a+b+p}\right)^{\frac{n}{2}}\times$ $\times P_n\left(2\sqrt{\frac{ab}{(a+b)^2-p^2}}\right)$
10.72	$\frac{e^{\frac{a+b}{2}t}D_{2n}(\sqrt{2at})\,D_{2m}(\sqrt{2bt})}{\sqrt{t}}$	$\frac{(-1)^{m+n}\sqrt{\pi}\,(2n+2m)!}{2^{n+m}(n+m)!}\times$ $\times\frac{(p-a)^n(p-b)^m}{p^{n+m-\frac{1}{2}}}\times$ $\times{}_2F_1\left[-n,\ -m;\ -n-m+\frac{1}{2};\ \frac{p(p-a-b)}{(p-a)(p-b)}\right]$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
10.73	$\dfrac{e^{\frac{a+b}{2}t}D_{2n+1}(\sqrt{2at})\,D_{2m+1}(\sqrt{2at})}{\sqrt{abt}}$	$\dfrac{(-1)^{m+n}\sqrt{\pi}\,(2n+2m+2)!}{2^{n+m+1}(n+m+1)!}\times$ $\times\dfrac{(p-a)^n(p-b)^m}{p^{n+m+\frac{1}{2}}}\times$ $\times\,{}_2F_1\left[-n,\ -m;\ -n-m-\dfrac{1}{2};\ \dfrac{p(p-a-b)}{(p-a)(p-b)}\right]$
10.74	$\dfrac{e^{\frac{t}{2}}D_n^2(\sqrt{t})}{\sqrt{t}}$	$\dfrac{\sqrt{\pi}}{2^{2n}}\sum\limits_{m=0}^{n}\dfrac{n!\,(2m)!\,(2n-2m)!}{m!\,m!\,(n-m)!}\times$ $\times\sum\limits_{k=0}^{n-m}\dfrac{(-1)^k}{k!\,(n-m-k)!}p^{-n+m+k+\frac{1}{2}}$
10.75	$\dfrac{e^{\frac{t}{2}}}{\sqrt{t}}\sum\limits_{n=0}^{\infty}\dfrac{2^n}{(2n)!}D_{2n}(\sqrt{2t})$	$e^{\frac{1}{p}-1}\sqrt{\pi p}$
10.76	$\sum\limits_{n=0}^{\infty}\dfrac{2^n n!}{(2n+1)!}D_{2n+1}(2\sqrt{t})$	$\dfrac{\sqrt{\pi}}{2\sqrt{p+1}}$
10.77	$\sum\limits_{n=0}^{\infty}\dfrac{2^n n!}{(2n)!}\,\dfrac{D_{2n}(2\sqrt{t})}{\sqrt{t}}$	$\dfrac{\sqrt{\pi}}{2}\sqrt{p+1}$
10.78	$e^{-\frac{t^2}{4}}\sum\limits_{m=0}^{n}(-1)^{n-m}\dfrac{n!\,t^{n-m}D_{n-m}(t)}{m!\,[(n-m)!]^2}$	$p^{n+1}e^{\frac{p^2}{4}}D_{-n-1}(p)$
10.79	$\int\limits_0^t\dfrac{D_n(\sqrt{2x})\,D_n(i\sqrt{2x})}{\sqrt{x(t-x)}}\times$ $\times D_m[\sqrt{2(t-x)}]D_m[i\sqrt{2(t-x)}]dx$	$(-1)^{\frac{m+n}{2}}\pi m!\,n!\,P_m\left(\dfrac{1}{p}\right)P_n\left(\dfrac{1}{p}\right)$

№	$f(t)$	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
10.80	$k_0(t)$	$\dfrac{p}{p+1}$, $\operatorname{Re} p>-1$
10.81	$k_{2n+2}(t)$	$\dfrac{2p(1-p)^n}{(1+p)^{n+2}}$, $\operatorname{Re} p>-1$
10.82	$k_{2\nu}(t)$	$\dfrac{p\sin(\nu\pi)}{2\pi\nu(1-\nu)}\,{}_2F_1\left(1,\ 2;\ 2-\nu;\ \dfrac{1-p}{2}\right)$
10.83	$t^{n-\frac{1}{2}}k_{2n+2}(t)$	$(-1)^{n-1}\dfrac{(2n)!\,\sqrt{\pi}}{(n+1)!\,2^{2n+\frac{1}{2}}}\dfrac{p}{(p+1)^{n+1}}\times$ $\times P^{(1)}_{2n+1}\left(\sqrt{\dfrac{p-1}{p+1}}\right)$
10.84	$\exp(-t^2)\,k_{2n}(t^2)$	$(-1)^{n-1}\,2^{-\frac{1}{4}-\frac{3n}{2}}\,p^{n-\frac{1}{2}}\exp\left(\dfrac{p^2}{16}\right)\times$ $\times W_{-\frac{3}{4}-\frac{n}{2},\,\frac{1}{4}-\frac{n}{2}}\left(\dfrac{p^2}{8}\right)$
10.85	$\dfrac{e^{-\sqrt{t}}\,k_{2n}(\sqrt{t})}{\sqrt{t}}$	$\sum\limits_{m=0}^{n-1}(-1)^m\binom{n-1}{m}\left(\dfrac{2}{p}\right)^{\frac{n-m+1}{2}}\times$ $\times p\exp\left(\dfrac{1}{2p}\right)D_{-n+m-1}\left(\sqrt{\dfrac{2}{p}}\right)$
10.86	$\dfrac{k_{2m+2}\left(\dfrac{t}{2}\right)k_{2n+2}\left(\dfrac{t}{2}\right)}{t}$	$-\dfrac{(-p)^{m+n+1}}{(p+1)^{m+n+2}}\times$ $\times\,{}_2F_1\left(-m,\ -n;\ 2;\ \dfrac{1}{p^2}\right)$ $\operatorname{Re} p>-1$
10.87	$\dfrac{\exp\left(\dfrac{\alpha+\beta}{2}t\right)}{\alpha\beta t}k_{2m+2}\left(\dfrac{\alpha t}{2}\right)\times$ $\times k_{2n+2}\left(\dfrac{\beta t}{2}\right)$	$\dfrac{(-1)^{m+n}(m+n+1)!}{(m+1)!\,(n+1)!}\times$ $\times\dfrac{(p-\alpha)^m(p-\beta)^n}{p^{m+n+1}}\times$ $\times\,{}_2F_1\left[-m,\ -n;\ -m-n-1;\ \dfrac{p(p-\alpha-\beta)}{(p-\alpha)(p-\beta)}\right]$

№	$f(t)$	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
10.88	$t^{\lambda-1}k_{2m_1+2}(a_1t)\ldots k_{2m_n+2}(a_nt)$	$(-1)^{m_1+\ldots+m_n}2^n a_1\ldots a_n p\times$ $\times(p+a_1+\ldots+a_n)^{-\lambda-n}\Gamma(\lambda+n)\times$ $\times{}_1F_{\alpha_1+\ldots+\alpha_n}\Big(\lambda+n;\ -m_1,\ldots$ $\ldots,-m_n;\ 2,\ldots,2;$ $\dfrac{2\alpha_1}{p+\alpha_1+\ldots+\alpha_n},\ldots$ $\ldots,\dfrac{2\alpha_n}{p+\alpha_1+\ldots+\alpha_n}\Big)$
10.89	$t^{\mu-\frac{1}{2}}M_{k,\mu}(at)$, $\operatorname{Re}\mu>-\dfrac{1}{2}$	$a^{\mu+\frac{1}{2}}\Gamma(2\mu+1)\,p\dfrac{\left(p-\frac{a}{2}\right)^{k-\mu-\frac{1}{2}}}{\left(p+\frac{a}{2}\right)^{k+\mu+\frac{1}{2}}}$ $\operatorname{Re}p>\dfrac{1}{2}\lvert\operatorname{Re}a\rvert$
10.90	$t^{\nu-1}M_{k,\mu}(at)$, $\operatorname{Re}(\mu+\nu)>-\dfrac{1}{2}$	$a^{\mu+\frac{1}{2}}\Gamma\left(\mu+\nu+\dfrac{1}{2}\right)\times$ $\times\dfrac{p}{\left(p+\frac{a}{2}\right)^{\mu+\nu+\frac{1}{2}}}\times$ $\times{}_2F_1\Bigg[\mu+\nu+\dfrac{1}{2},\ \mu-k+\dfrac{1}{2};$ $2\mu+1;\ \dfrac{a}{p+\frac{a}{2}}\Bigg]$, $\operatorname{Re}p>\dfrac{1}{2}\lvert\operatorname{Re}a\rvert$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
10.91	$t^{2\nu-1}\exp\left(-\frac{t^2}{2a}\right)M_{-3\nu,\,\nu}\left(\frac{t^2}{a}\right)$ $\operatorname{Re}a>0,\quad \operatorname{Re}\nu>-\frac{1}{4}$	$\frac{1}{2\sqrt{\pi}}\Gamma(4\nu+1)\frac{1}{a^\nu p^{4\nu-1}}\times$ $\times\exp\left(\frac{ap^2}{8}\right)K_{2\nu}\left(\frac{ap^2}{8}\right)$
10.92	$t^{2\mu-1}\exp\left(-\frac{t^2}{2a}\right)M_{k,\,\mu}\left(\frac{t^2}{a}\right)$ $\operatorname{Re}a>0,\quad \operatorname{Re}\mu>-\frac{1}{4}$	$2^{-3\mu-k}\Gamma(4\mu+1)\,a^{\frac{1}{2}(k+\mu-1)}\times$ $\times p^{k-\mu}\exp\left(\frac{ap^2}{8}\right)\times$ $\times W_{-\frac{1}{2}(k+3\mu),\,\frac{1}{2}(k-\mu)}\left(\frac{ap^2}{4}\right)$
10.93	$t^{\nu-\frac{1}{2}}e^{\frac{t}{2}}M_{n+\nu+\frac{1}{2},\,\nu}(t)$ $\operatorname{Re}\nu>-\frac{1}{2}$	$\frac{\Gamma(2\nu+1)}{p^{2\nu}}\left(1-\frac{1}{p}\right)^n$
10.94	$t^{-\frac{3}{4}}e^{-\frac{t}{2}}M_{\mu,\,-\frac{1}{4}}(t)$	$\frac{\sqrt{\pi}\,p^{\mu+\frac{3}{4}}}{(p+1)^{\mu+\frac{1}{4}}}$
10.95	$t^{-\frac{1}{4}}e^{-\frac{t}{2}}M_{\mu,\,\frac{1}{4}}(t)$	$\frac{\sqrt{\pi}\,p^{\mu+\frac{1}{4}}}{2(p+1)^{\mu+\frac{3}{4}}}$
10.96	$t^{-\frac{4}{5}}e^{\frac{t}{2}}M_{-\frac{1}{4}\quad\frac{n}{2}+\frac{1}{4}}(t)$	$\frac{2^{n+1}}{\sqrt{\pi}}\frac{\Gamma\left(\frac{n+1}{2}\right)\Gamma\left(n+\frac{3}{2}\right)}{\Gamma(n+1)}\times$ $\times pQ_n(\sqrt{p})$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
10.97	$t^{\nu-1}M_{k_1,\,\mu_1-\frac{1}{2}}(a_1t)\ldots$ $\ldots M_{k_n,\,\mu_n-\frac{1}{2}}(a_nt)$, $\operatorname{Re}(\nu+\mu_1+\ldots+\mu_n)>0$	$a_1^{\mu_1}\ldots a_n^{\mu_n}p\left[p+\frac{1}{2}(a_1+\ldots\right.$ $\left.\ldots+a_n)\right]^{-\nu-\mu_1-\ldots-\mu_n}\times$ $\times\Gamma(\nu+\mu_1+\ldots+\mu_n)\times$ $\times{}_1F_{\frac{a_1+\ldots+a_n}{2}}\left(\nu+\mu_1+\ldots+\mu_n;\right.$ $\mu_1-k_1,\ldots,\mu_n-k_n;$ $2\mu_1,\ldots,2\mu_n;$ $\frac{a_1}{p+\frac{1}{2}(a_1+\ldots+a_n)},\ldots$ $\left.\ldots,\frac{a_n}{p+\frac{1}{2}(a_1+\ldots+a_n)}\right)$ $\operatorname{Re}\left(p\pm\frac{1}{2}a_1\pm\ldots\pm\frac{1}{2}a_n\right)>0$
10.98	$(e^t-1)^{\mu-\frac{1}{2}}\exp\left(-\frac{1}{2}\lambda e^t\right)\times$ $\times M_{k,\mu}(\lambda e^t-\lambda)$, $\operatorname{Re}\mu>-\frac{1}{2}$	$\frac{\Gamma(2\mu+1)\Gamma\left(\frac{1}{2}+k-\mu+p\right)}{\Gamma(p+1)}\times$ $\times pW_{-k-\frac{p}{2},\,\mu-\frac{p}{2}}(\lambda)$, $\operatorname{Re}p>\operatorname{Re}(\mu-k)-\frac{1}{2}$
10.99	$\frac{t^{\nu-\frac{1}{2}}e^{\frac{t}{2}+1}}{\Gamma(2\nu+1)}\times$ $\times\sum\limits_{m=0}^{\infty}(-1)^m\frac{M_{m+\nu+\frac{1}{2},\,\nu}(t)}{m!}$ $\operatorname{Re}\nu>-\frac{1}{2}$	$\frac{e^{\frac{1}{p}}}{p^{2\nu}}$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
10.100	$\dfrac{t^{\nu-\frac{1}{2}}e^{\frac{t}{2}+1}}{\Gamma(2\nu+1)}\times\sum\limits_{m=0}^{\infty}\dfrac{M_{m+\nu+\frac{1}{2},\ \nu}(t)}{m!}$ $\operatorname{Re}\nu>-\frac{1}{2}$	$\dfrac{e^{-\frac{1}{p}}}{p^{2\nu}}$
10.101	$t^{\nu-1}W_{k,\mu}(at),\quad \operatorname{Re}(\nu\pm\mu)>-\frac{1}{2}$	$\dfrac{\Gamma\left(\mu+\nu+\frac{1}{2}\right)}{\Gamma(\nu-k+1)}\times\dfrac{\Gamma\left(\nu-\mu+\frac{1}{2}\right)a^{\mu+\frac{1}{2}}}{\left(p+\frac{a}{2}\right)^{\mu+\nu+\frac{1}{2}}}\times p\,{}_2F_1\left(\mu+\nu+\frac{1}{2},\ \mu-k+\frac{1}{2};\ \nu-k+1;\ \dfrac{p-\frac{a}{2}}{p+\frac{a}{2}}\right)$ $\operatorname{Re}\left(p+\frac{a}{2}\right)>0$
10.102	$\dfrac{W_{0,\ \nu+\frac{1}{2}}(2t)}{2t}$	$-\dfrac{\pi}{2\sin\nu\pi}\,pP_\nu(p)$
10.103	$t^{\alpha}e^{-\frac{t}{2}}W_{\mu,\nu}(t)$	$\dfrac{\Gamma\left(\alpha+\nu+\frac{3}{2}\right)\Gamma\left(\alpha-\nu+\frac{3}{2}\right)}{\Gamma(\alpha-\mu+2)}\times p\,{}_2F_1\left(\alpha+\nu+\frac{3}{2},\ \alpha-\nu+\frac{3}{2};\ \alpha-\mu+2;\ -p\right)$

№	$f(t)$	$\bar f(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
10.104	$t^{-\frac{m}{2}}e^tW_{n-\frac{m}{2},\ \frac{1-m}{2}}(2t)$	$2^{1-\frac{m}{2}}\Gamma(1+n+m)(2-p)^{n-1}p^{m-n}$
10.105	$\dfrac{\exp\left(-\frac{a}{2t}\right)W_{\frac{1}{2},\ \mu}\left(\frac{a}{t}\right)}{t}$ $\operatorname{Re}a>0$	$2\sqrt{\frac{2a}{\pi}}\,p^{\frac{3}{2}}K_{\mu+\frac{1}{2}}(\sqrt{ap})\times$ $\times K_{\mu-\frac{1}{2}}(\sqrt{ap})$
10.106	$\dfrac{\exp\left(\frac{a}{2t}\right)W_{-\frac{1}{2},\ \mu}\left(\frac{a}{t}\right)}{t}$ $\|\arg a\|<\pi$	$\frac{\pi\sqrt{a\pi}}{4\mu}p^{\frac{3}{2}}\times$ $\times\Big[H^{(1)}_{\mu+\frac{1}{2}}(\sqrt{ap})H^{(2)}_{\mu-\frac{1}{2}}(\sqrt{ap})+$ $+H^{(1)}_{\mu-\frac{1}{2}}(\sqrt{ap})H^{(2)}_{\mu+\frac{1}{2}}(\sqrt{ap})\Big]$
10.107	$t^{3\nu-\frac{1}{2}}\exp\left(\frac{a}{2t}\right)W_{\nu,\ \nu}\left(\frac{a}{t}\right)$ $\|\arg a\|<\pi,\ \operatorname{Re}\nu>-\frac{1}{4}$	$\frac{1}{2}\Gamma\left(2\nu+\frac{1}{2}\right)\frac{a^{\nu+\frac{1}{2}}}{p^{2\nu-1}}\times$ $\times H^{(1)}_{2\nu}(\sqrt{ap})H^{(2)}_{2\nu}(\sqrt{ap})$
10.108	$t^{\alpha}e^{\frac{t}{2}}W_{\mu,\ \nu}(t)$	$\dfrac{\Gamma\left(\mu+\nu+\frac{1}{2}\right)\Gamma\left(\mu-\nu+\frac{1}{2}\right)}{\Gamma(\mu-\alpha)}\times$ $\times p^{\frac{1}{2}-\mu-\nu}(1-p)^{\mu-\alpha-1}\times$ $\times{}_2F_1\Big(\mu+\nu+\frac{1}{2},\ \nu-\alpha-\frac{1}{2};$ $\mu-\alpha;\quad 1-\frac{1}{p}\Big),\ \mu-\alpha>0$
10.109	$t^{-\frac{\nu+1}{2}}e^{\frac{t}{2}}W_{\frac{\nu}{2}+\frac{1}{2}+\mu,\ \frac{\nu}{2}}(t)$	$\Gamma(\mu+1)(-1)^{\mu+\nu}p^{\nu}\left(1-\frac{1}{p}\right)^{\mu+\nu}$

№	$f(t)$	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
10.110	$\dfrac{a^{2\mu}\exp\left(-\dfrac{a^2}{8t}\right)W_{\mu,\nu}\left(\dfrac{a^2}{4t}\right)}{t^{\mu}}$	$\dfrac{a^{2\mu+1}}{p^{\frac{2\mu-1}{2}}}K_{2\nu}(a\sqrt{p})$
10.111	$t^k\exp\left(\dfrac{a}{2t}\right)W_{k,\mu}\left(\dfrac{a}{t}\right)$ $\lvert\arg a\rvert<\pi,\ \operatorname{Re}(k\pm\mu)>-\dfrac{1}{2}$	$2^{1-2k}\sqrt{a}\,p^{-k+\frac{1}{2}}S_{2k,2\mu}(2\sqrt{ap})$
10.112	$t^{-3\nu-\frac{1}{2}}\exp\left(-\dfrac{a}{2t}\right)W_{\nu,\nu}\left(\dfrac{a}{t}\right)$ $\operatorname{Re}a>0$	$\dfrac{2}{\sqrt{\pi}}a^{\frac{1}{2}-\nu}p^{2\nu+1}[K_{2\nu}(\sqrt{ap})]^2$
10.113	$(1-e^{-t})^{-k}\exp\left[-\dfrac{\lambda}{2(e^t-1)}\right]\times$ $\times W_{k,\mu}\left[\dfrac{\lambda}{e^t-1}\right],\ \operatorname{Re}\lambda>0$	$\dfrac{\Gamma\left(\frac{1}{2}+\mu+p\right)\Gamma\left(\frac{1}{2}-\mu+p\right)}{\Gamma(1-k+p)}\times$ $\times pe^{\frac{\lambda}{2}}W_{-p,\mu}(\lambda)$ $\operatorname{Re}\left(\dfrac{1}{2}\pm\mu+p\right)>0$
10.114	$\lambda e^t(e^t-1)^{-k-1}\exp\left[-\dfrac{\lambda}{2(e^t-1)}\right]\times$ $\times W_{k,\mu}\left(\dfrac{\lambda}{1-e^{-t}}\right),\ \operatorname{Re}\lambda>0$	$p\Gamma(k+p)W_{-p,\mu}(\lambda)$ $\operatorname{Re}p>-\operatorname{Re}k$
10.115	$Yi_0(t)$	$-\dfrac{1}{\pi}[\ln(p+\sqrt{p^2+1})]^2$
10.116	$Yi_\nu(t),\quad -1<\operatorname{Re}\nu<1$	$\dfrac{1+\cos(\nu\pi)-(p+\sqrt{p^2+1})^{\nu}}{\nu\sin(\nu\pi)}-$ $-\dfrac{\cos(\nu\pi)(p+\sqrt{p^2+1})^{-\nu}}{\nu\sin(\nu\pi)}$
10.117	$Ki_0(t)$	$\dfrac{(\operatorname{Arch}p)^2}{2}+\dfrac{\pi^2}{8}$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
10.118	$Ki_\nu(t), \quad -1<\operatorname{Re}\nu<1$	$\pi\left[\dfrac{(p+\sqrt{p^2-1})^\nu}{2\nu\sin(\nu\pi)}+\dfrac{(p+\sqrt{p^2-1})^{-\nu}-2\cos\left(\frac{\nu\pi}{2}\right)}{2\nu\sin(\nu\pi)}\right]$

§ 11. Функции Бесселя действительного аргумента

11.1	$J_0(at)$	$\dfrac{p}{\sqrt{p^2+a^2}}$
11.2	$J_\nu(at), \quad \operatorname{Re}\nu>-1$	$\dfrac{a^\nu p}{\sqrt{p^2+a^2}\,(p+\sqrt{p^2+a^2})^\nu}=\dfrac{p}{\sqrt{p^2+a^2}}e^{-\nu\operatorname{Arsh}\left(\frac{p}{a}\right)}$ $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
11.3	$tJ_\nu(at), \quad \operatorname{Re}\nu>-2$	$\dfrac{a^\nu p\,(p+\nu\sqrt{p^2+a^2})}{(\sqrt{p^2+a^2})^3\,(p+\sqrt{p^2+a^2})^\nu}$ $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
11.4	$t^2J_\nu(at), \quad \operatorname{Re}\nu>-3$	$\left\{\dfrac{(\nu^2-1)\,p}{(p^2+a^2)^{\frac{3}{2}}}+3p^2\dfrac{p+\nu\sqrt{p^2+a^2}}{(p^2+a^2)^{\frac{5}{2}}}\right\}\times$ $\times\left(\dfrac{a}{p+\sqrt{p^2+a^2}}\right)^\nu$ $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
11.5	$t^nJ_n(at)$	$1\cdot3\cdot5\ldots(2n-1)\,a^n\,\dfrac{p}{(p^2+a^2)^{n+\frac{1}{2}}}$ $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
11.6	$\dfrac{J_\nu(at)}{t}, \quad \operatorname{Re}\nu>0$	$\dfrac{p}{\nu}\left(\dfrac{a}{p+\sqrt{p^2+a^2}}\right)^\nu, \ \operatorname{Re}p\geqslant\lvert\operatorname{Im}a\rvert$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
11.7	$\dfrac{J_\nu(at)}{t^2}$, $\operatorname{Re}\nu>1$	$\dfrac{ap}{2\nu}\left[\dfrac{1}{\nu-1}\left(\dfrac{a}{p+\sqrt{p^2+a^2}}\right)^{\nu-1}+\right.$ $\left.+\dfrac{1}{\nu+1}\left(\dfrac{a}{p+\sqrt{p^2+a^2}}\right)^{\nu+1}\right]$ $\operatorname{Re}p\geqslant\vert\operatorname{Im}a\vert$
11.8	$t^\nu J_\nu(at)$, $\operatorname{Re}\nu>-\dfrac{1}{2}$	$\dfrac{2^\nu\Gamma\left(\nu+\frac{1}{2}\right)a^\nu}{\sqrt{\pi}}\dfrac{p}{(p^2+a^2)^{\nu+\frac{1}{2}}}$ $\operatorname{Re}p>\vert\operatorname{Im}a\vert$
11.9	$\sqrt{t}\,J_{\frac{1}{2}}(t)$	$\sqrt{\dfrac{2}{\pi}}\dfrac{p}{p^2+1}$
11.10	$\sqrt{t}\,J_{-\frac{1}{2}}(t)$	$\sqrt{\dfrac{2}{\pi}}\dfrac{p^2}{p^2+1}$
11.11	$J_{\frac{1}{2}}(t)$	$\dfrac{p}{\sqrt{p^2+1}\sqrt{p+\sqrt{p^2+1}}}$
11.12	$J_{-\frac{1}{2}}(t)$	$\dfrac{p\sqrt{p+\sqrt{p^2+1}}}{\sqrt{p^2+1}}$
11.13	$t^2J_0(t)$	$\dfrac{p(2p^2-1)}{(\sqrt{p^2+1})^5}$
11.14	$t^\nu J_m(t)$, $m>0$, $\operatorname{Re}(\nu+m)>-1$	$(-1)^m\Gamma(\nu-m+1)\dfrac{p}{(\sqrt{p^2+1})^{\nu+1}}\times$ $\times P_\nu^m\left(\dfrac{p}{\sqrt{p^2+1}}\right)$
11.15	$t^{\nu+1}J_\nu(at)$, $\operatorname{Re}\nu>-1$	$\dfrac{2^{\nu+1}a^\nu}{\sqrt{\pi}}\Gamma\left(\nu+\dfrac{3}{2}\right)\times$ $\times\dfrac{p^2}{(p^2+a^2)^{\frac{2\nu+3}{2}}}$, $\operatorname{Re}p>\vert\operatorname{Im}a\vert$

№	$f(t)$	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
11.16	$t^{\mu}J_{\nu}(at),\quad \mathrm{Re}(\mu+\nu)>-1$	$\Gamma(\mu+\nu+1)\dfrac{pP_{\mu}^{-\nu}\left(\dfrac{p}{\sqrt{p^2+a^2}}\right)}{(\sqrt{p^2+a^2})^{\mu+1}}$, $\mathrm{Re}\,p>\lvert\mathrm{Im}\,a\rvert$
11.17	$t^{\mu}\sin(at)\,J_{\mu}(at),\ a>0,\ \mathrm{Re}\,\mu>-1$	$\dfrac{\Gamma(\mu+1)\,a^{\mu+1}}{\sqrt{2}\,\pi}\times$ $\times p\displaystyle\int\limits_0^{\frac{\pi}{2}}\dfrac{(\cos\varphi)^{\mu+\frac{1}{2}}\cos\left[\left(\mu-\frac{1}{2}\right)\varphi\right]}{\left(\frac{1}{4}p^2+a^2\cos^2\varphi\right)^{\mu+1}}\,d\varphi$
11.18	$t^{\mu-1}\cos(at)\,J_{\mu}(at),\quad a>0,$ $\mathrm{Re}\,\mu>0$	$\dfrac{\Gamma(\mu)\,a^{\mu}}{\sqrt{2}\,\pi}\times$ $\times p\displaystyle\int\limits_0^{\frac{\pi}{2}}\dfrac{(\cos\varphi)^{\mu-\frac{1}{2}}\cos\left[\left(\mu+\frac{1}{2}\right)\varphi\right]}{\left(\frac{1}{4}p^2+a^2\cos^2\varphi\right)^{\mu}}\,d\varphi$
11.19	$\left[J_0^2\left(\dfrac{at}{2}\right)\right]^2$	$\dfrac{2}{\pi}\dfrac{p}{\sqrt{p^2+a^2}}K\left(\dfrac{a}{\sqrt{p^2+a^2}}\right)$ $\mathrm{Re}\,p>\lvert\mathrm{Im}\,a\rvert$
11.20	$J_1^2\left(\dfrac{at}{2}\right)$	$\dfrac{4p}{\pi a^2}\left[\dfrac{p^2+\frac{a^2}{2}}{\sqrt{p^2+a^2}}K\left(\dfrac{a}{\sqrt{p^2+a^2}}\right)-\right.$ $\left.-\sqrt{p^2+a^2}\;E\left(\dfrac{a}{\sqrt{p^2+a^2}}\right)\right]$ $\mathrm{Re}\,p>\lvert\mathrm{Im}\,a\rvert$
11.21	$\left[J_1^2\left(\dfrac{at}{2}\right)\right]^2$	$\dfrac{2}{\pi a^2}\dfrac{p}{(p^2+a^2)}\times$ $\times\left[(2p^2+a^2)K\left(\dfrac{a}{\sqrt{p^2+a^2}}\right)-\right.$ $\left.-2(p^2+a^2)E\left(\dfrac{a}{\sqrt{p^2+a^2}}\right)\right]$ $\mathrm{Re}\,p>\lvert\mathrm{Im}\,a\rvert$

№	$f(t)$	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
11.22	$tJ_0\left(\frac{at}{2}\right)J_1\left(\frac{at}{2}\right)$	$\frac{2}{\pi a}\frac{p}{\sqrt{p^2+a^2}}\left[K\left(\frac{a}{\sqrt{p^2+a^2}}\right)-\right.$ $\left.-E\left(\frac{a}{\sqrt{p^2+a^2}}\right)\right]$
11.23	$J_0^2\left(\frac{at}{2}\right)+J_1^2\left(\frac{at}{2}\right)$	$\frac{4}{\pi}\frac{p}{\sqrt{p^2+a^2}}D\left(\frac{a}{\sqrt{p^2+a^2}}\right)$
11.24	$J_0^2\left(\frac{at}{2}\right)-J_1^2\left(\frac{at}{2}\right)$	$\frac{4}{\pi}\frac{p}{\sqrt{p^2+a^2}}B\left(\frac{a}{\sqrt{p^2+a^2}}\right)$
11.25	$\frac{J_0(at)\,J_1(\alpha t)}{t}$	$\frac{p}{\pi\alpha}\int\limits_{-\alpha}^{\alpha}\frac{\sqrt{\alpha^2-u^2}}{\sqrt{a^2+(p+iu)^2}}\,du$
11.26	$J_0(\alpha t)\,J_0(at)$	$\frac{p}{\pi}\int\limits_{-\alpha}^{\alpha}\frac{du}{\sqrt{(\alpha^2-u^2)\,[a^2+(p+iu)^2]}}$
11.27	$J_\nu(\alpha t)\,J_\nu(at)$, $\operatorname{Re}\nu>-\frac{1}{2}$	$\frac{p}{\pi\sqrt{\alpha a}}Q_{\nu-\frac{1}{2}}\left(\frac{p^2+\alpha^2+a^2}{2\alpha a}\right)$ $\operatorname{Re}p>\lvert\operatorname{Im}\alpha\rvert+\lvert\operatorname{Im}a\rvert$
11.28	$tJ_\nu^2(at)$, $\operatorname{Re}\nu>-1$	$\frac{2^{2\nu+1}\Gamma\left(\nu+\frac{1}{2}\right)a^{2\nu}}{\pi}p^{-2\nu-1}\times$ $\times B\left(\nu+\frac{1}{2},\ \nu+\frac{1}{2}\right)\times$ $\times{}_2F_1\left(\nu+\frac{1}{2},\ \nu+\frac{3}{2};\right.$ $\left.2\nu+1;\ -\frac{4a^2}{p^2}\right)$ $\operatorname{Re}p>2\lvert\operatorname{Im}a\rvert$

№	$f(t)$	$\bar{f}(p) = p\int_0^\infty e^{-pt} f(t)\,dt$
11.29	$J_n^2\left(\frac{at}{2}\right)$	$(-1)^n \frac{2p}{\pi}\int_0^{\frac{\pi}{2}} \frac{\cos 2nu}{\sqrt{p^2+a^2\cos^2 u}}\,du$
11.30	$\frac{J_1^2(t)}{t^2}$	$\frac{p}{2\pi}\int_0^{\pi}(1+\cos u)\times$ $\times\left[\sqrt{p^2+2(1-\cos u)}-p\right]du$
11.31	$t^{\mu-\nu} J_\nu(at) J_\mu(bt)$ $\operatorname{Re}\mu > -\frac{1}{2}$	$\beta p\int_{-1}^{1}\frac{(1-u^2)^{\nu-\frac{1}{2}}du}{[b^2+(p+iau)^2]^{\mu+\frac{1}{2}}} =$ $= \beta p\int_0^{\pi}\frac{\sin^{2\nu}\varphi\,d\varphi}{[b^2+(p+ia\cos\varphi)^2]^{\mu+\frac{1}{2}}}$ $\beta = \frac{a^\nu b^\mu\,\Gamma(2\mu+1)}{2^{\mu+\nu}\sqrt{\pi}\,\Gamma\left(\nu+\frac{1}{2}\right)}$
11.32	$\sqrt{t}\,J_\nu^2\left(\frac{at}{2}\right)$, $\operatorname{Re}\nu > -\frac{3}{4}$	$\frac{a\Gamma\left(2\nu+\frac{3}{2}\right)}{2^{\nu+\frac{3}{2}}}\sqrt{\frac{p}{p^2+a^2}}\times$ $\times P_{\frac{1}{4}}^{-\nu}\left(\frac{\sqrt{p^2+a^2}}{p}\right)\times$ $P_{-\frac{1}{4}}^{-\nu}\left(\frac{\sqrt{p^2+a^2}}{p}\right)$, $\operatorname{Re}p > \lvert\operatorname{Im}a\rvert$
11.33	$\frac{J_\nu^2\left(\frac{at}{2}\right)}{\sqrt{t}}$, $\operatorname{Re}\nu > -\frac{1}{4}$	$\frac{\Gamma\left(2\nu+\frac{1}{2}\right)}{2^{\nu+\frac{1}{2}}}\sqrt{p}\times$ $\times\left[P_{-\frac{1}{4}}^{-\nu}\left(\frac{\sqrt{p^2+a^2}}{p}\right)\right]^2$ $\operatorname{Re}p > \lvert\operatorname{Im}a\rvert$

№	$f(t)$	$\bar{f}(p) = p\int_0^\infty e^{-pt} f(t)\,dt$
11.34	$\sqrt{t}\,J_\nu\left(\frac{at}{2}\right)J_{-\nu}\left(\frac{at}{2}\right)$	$\frac{a\sqrt{\pi p}}{2\sqrt{p^2+a^2}}\left[\left(\nu+\frac{1}{4}\right)\times P^{\nu}_{-\frac{1}{4}}\left(\frac{\sqrt{p^2+a^2}}{p}\right)\times P^{-\nu}_{\frac{1}{4}}\left(\frac{\sqrt{p^2+a^2}}{p}\right)-\left(\nu-\frac{1}{4}\right)\times P^{\nu}_{\frac{1}{4}}\left(\frac{\sqrt{p^2+a^2}}{p}\right)\times P^{-\nu}_{-\frac{1}{4}}\left(\frac{\sqrt{p^2+a^2}}{p}\right)\right]$ $\operatorname{Re} p > \lvert\operatorname{Im} a\rvert$
11.35	$\sqrt{t}\,J_\nu\left(\frac{at}{2}\right)J_{\nu+1}\left(\frac{at}{2}\right)$, $\operatorname{Re}\nu > -\frac{5}{4}$	$\frac{a\Gamma\left(2\nu+\frac{5}{2}\right)}{2^{\nu+\frac{5}{2}}}\sqrt{\frac{p}{p^2+a^2}}\times P^{-\nu}_{-\frac{1}{4}}\left(\frac{\sqrt{p^2+a^2}}{p}\right)\times P^{-\nu-1}_{-\frac{1}{4}}\left(\frac{\sqrt{p^2+a^2}}{p}\right)$ $\operatorname{Re} p > \lvert\operatorname{Im} a\rvert$
11.36	$\frac{J_\nu\left(\frac{at}{2}\right)J_{-\nu}\left(\frac{at}{2}\right)}{\sqrt{t}}$	$\sqrt{\frac{\pi p}{2}}\,P^{\nu}_{-\frac{1}{4}}\left(\frac{\sqrt{p^2+a^2}}{p}\right)\times P^{-\nu}_{-\frac{1}{4}}\left(\frac{\sqrt{p^2+a^2}}{p}\right)$ $\operatorname{Re} p > \lvert\operatorname{Im} a\rvert$
11.37	$J_0(2\sqrt{at})$	$e^{-\frac{a}{p}}$
11.38	$J_\nu(2\sqrt{at})$, $\operatorname{Re}\nu > -2$	$\frac{\sqrt{a\pi}}{2\sqrt{p}}\exp\left(-\frac{a}{2p}\right)\times\left[I_{\frac{\nu}{2}-\frac{1}{2}}\left(\frac{a}{2p}\right)-I_{\frac{\nu}{2}+\frac{1}{2}}\left(\frac{a}{2p}\right)\right]$

№	$f(t)$	$f(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
11.39	$\sqrt{t}\,J_1(2\sqrt{at})$	$\frac{\sqrt{a}}{p}\,e^{-\frac{a}{p}}$
11.40	$t^{n-\frac{1}{2}}J_1(2\sqrt{at})$	$\frac{(-1)^{n-1}\,n!}{\sqrt{a}}\,p^{1-n}\,e^{-\frac{a}{2p}}\,k_{2n}\left(\frac{a}{2p}\right)$
11.41	$\frac{J_\nu(2\sqrt{at})}{\sqrt{t}}$, $\operatorname{Re}\nu>-$	$\sqrt{\pi p}\,e^{-\frac{a}{2p}}I_{\frac{\nu}{2}}\left(\frac{a}{2p}\right)$
11.42	$t^{\frac{\nu}{2}}J_\nu(2\sqrt{at})$, $\operatorname{Re}\nu>-1$	$a^{\frac{\nu}{2}}p^{-\nu}e^{-\frac{a}{p}}$
11.43	$t^{-\frac{\nu}{2}}J_\nu(2\sqrt{at})$	$\frac{e^{i\nu\pi}p^\nu}{a^{\frac{\nu}{2}}\Gamma(\nu)}\,e^{-\frac{a}{p}}\gamma\left(\nu,\,\frac{a}{p}\,e^{-i\pi}\right)$
11.44	$\frac{J_0(a\sqrt{t})}{\sqrt{t}}$	$\sqrt{\pi p}\,e^{-\frac{a^2}{8p}}I_0\left(\frac{a^2}{8p}\right)$
11.45	$t^{n+\frac{\alpha}{2}}J_\alpha(2\sqrt{t})$, $\alpha>-1$, $n>0$	$\frac{n!\,e^{-\frac{1}{p}}}{p^{n+\alpha}}\,L_n^{(\alpha)}\left(\frac{1}{p}\right)$
11.46	$t^nJ_0(2\sqrt{t})$	$\frac{e^{-\frac{1}{p}}}{p^n}\,L_n\left(\frac{1}{p}\right)$
11.47	$\frac{J_{2\nu}(\sqrt{8t})}{\sqrt{t}}$, $\operatorname{Re}\nu>-\frac{1}{2}$	$\sqrt{\pi p}\,e^{-\frac{1}{p}}I_\nu\left(\frac{1}{p}\right)$
11.48	$t^{\frac{\nu}{2}-1}J_\nu(2\sqrt{at})$, $\operatorname{Re}\nu>0$	$\frac{p}{a^{\frac{\nu}{2}}}\,\gamma\left(\nu,\,\frac{a}{p}\right)$
11.49	$t^{\mu-\frac{1}{2}}J_{2\nu}(2\sqrt{at})$, $\operatorname{Re}(\mu+\nu)>-\frac{1}{2}$	$\frac{\Gamma\left(\mu+\nu+\frac{1}{2}\right)}{\sqrt{a}\,\Gamma(2\nu+1)}\,p^{1-\mu}\,e^{-\frac{a}{2p}}\times$ $\times M_{\mu,\nu}\left(\frac{a}{p}\right)$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
11.50	$t^{\mu-1}J_{2\nu}(2\sqrt{at})$, $\operatorname{Re}(\mu+\nu)>0$	$\frac{\Gamma(\mu+\nu)\,a^{\nu}}{\Gamma(2\nu+1)\,p^{\mu+\nu-1}}\times$ $\times{}_1F_1\left(\mu+\nu;\,2\nu+1;\,-\frac{a}{p}\right)$
11.51	$J_\nu^2(2a\sqrt{t})$, $\operatorname{Re}\nu>-1$	$\exp\left(-\frac{2a^2}{p}\right)I_\nu\left(\frac{2a^2}{p}\right)$
11.52	$t^{\frac{\nu}{2}}[J_\nu(2\sqrt{t})-I_\nu(2\sqrt{t})]$ $\operatorname{Re}\nu>-1$	$2p^{-\nu}\operatorname{sh}\frac{1}{p}$
11.53	$t^{\frac{\nu}{2}}[J_\nu(2\sqrt{t})+I_\nu(2\sqrt{t})]$ $\operatorname{Re}\nu>-1$	$2p^{-\nu}\operatorname{ch}\frac{1}{p}$
11.54	$t^{\nu-\frac{1}{2}}\{J_{2\mu}(2\sqrt{t})\cos[(\nu+\mu)\pi]-$ $-J_{-2\mu}(2\sqrt{t})\cos[(\nu-\mu)\pi]\}$, $\operatorname{Re}(\nu\pm\mu)>-\frac{1}{2}$	$-\sin(2\mu\pi)\,p^{1-\nu}e^{-\frac{1}{2p}}W_{\nu,\mu}\left(\frac{1}{p}\right)$
11.55	$t^{\frac{\nu}{2}}L_n^{(\nu)}(t)\,J_\nu(2\sqrt{at})$	$\frac{a^{\frac{\nu}{2}}(p-1)^n}{p^{\nu+n}}\exp\left(-\frac{a}{p}\right)\times$ $\times L_n^{(\nu)}\left[\frac{a}{p(1-p)}\right]$
11.56	$J_\nu(t)\,J_{2\nu}(2\sqrt{at})$ $\operatorname{Re}\nu>-\frac{1}{2}$	$\frac{p\exp\left(-\frac{ap}{p^2+1}\right)}{\sqrt{p^2+1}}J_\nu\left(\frac{a}{p^2+1}\right)$
11.57	$J_\nu(\alpha\sqrt{t})\,J_\nu(a\sqrt{t})$ $\operatorname{Re}\nu>-\frac{1}{2}$	$\exp\left(-\frac{\alpha^2+a^2}{4p}\right)I_\nu\left(\frac{\alpha a}{2p}\right)$
11.58	$\frac{J_\nu^2(2\sqrt{t})}{t}$, $\operatorname{Re}\nu>0$	$\frac{p}{\nu}e^{-\frac{2}{p}}\left[I_\nu\left(\frac{2}{p}\right)+2\sum_{n=1}^{\infty}I_{\nu+n}\left(\frac{2}{p}\right)\right]$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
11.59	$\frac{1}{\sqrt{t}}J_\nu\left(ae^{\frac{\pi i}{4}}\sqrt{t}\right)J_\nu\left(ae^{-\frac{\pi i}{4}}\sqrt{t}\right)$ $\operatorname{Re}\nu>-\frac{1}{2}$	$\frac{2^{1-\nu}\Gamma\left(\nu+\frac{1}{2}\right)}{a^2[\Gamma(\nu+1)]^2}p^{\frac{3}{2}}M_{\frac{1}{4},\frac{\nu}{2}}\left(\frac{a^2}{2p}\right)\times$ $\times M_{-\frac{1}{4},\frac{\nu}{2}}\left(\frac{a^2}{2p}\right)$
11.60	$t^{\lambda-1}J_{2\mu}(2\sqrt{at})\,J_{2\nu}(2\sqrt{at})$ $\operatorname{Re}(\lambda+\mu+\nu)>0$	$\frac{2\Gamma(\lambda+\mu+\nu)\,a^{\mu+\nu}}{\Gamma(2\mu+1)\,\Gamma(2\nu+1)\,p^{\lambda+\mu+\nu-1}}\times$ $\times{}_3F_3\left(\mu+\nu+\frac{1}{2},\ \mu+\nu+1,\right.$ $\lambda+\mu+\nu;\ 2\mu+1,\ 2\nu+1,$ $\left.2\mu+2\nu+1;\ -\frac{4a}{p}\right)$
11.61	$J_{\nu+\frac{1}{2}}\left(\frac{t^2}{2}\right),\quad \operatorname{Re}\nu>-1$	$\frac{\Gamma(\nu+1)}{\sqrt{\pi}}\,pD_{-\nu-1}\left(pe^{\frac{i\pi}{4}}\right)\times$ $\times D_{-\nu-1}\left(pe^{-\frac{i\pi}{4}}\right)$
11.62	$\sqrt{t}\,J_{\frac{1}{4}}(at^2),\quad a>0$	$\frac{\sqrt{\pi}}{4a}p^{\frac{3}{2}}\left[\mathbf{H}_{-\frac{1}{4}}\left(\frac{p^2}{4a}\right)-Y_{-\frac{1}{4}}\left(\frac{p^2}{4a}\right)\right]$
11.63	$\sqrt{t}\,J_{-\frac{1}{4}}(at^2),\quad a>0$	$\frac{\sqrt{\pi}}{4a}p^{\frac{3}{2}}\left[\mathbf{H}_{\frac{1}{4}}\left(\frac{p^2}{4a}\right)-Y_{\frac{1}{4}}\left(\frac{p^2}{4a}\right)\right]$
11.64	$\frac{J_{-\frac{1}{3}}\left(\frac{2}{3\sqrt{3t}}\right)}{\sqrt{3t}}$	$p^{\frac{1}{3}}s_1\left(-p^{\frac{1}{3}}\right)$
11.65	$\frac{J_{\frac{1}{3}}\left(\frac{2}{3\sqrt{3t}}\right)}{\sqrt{3t}}$	$p^{\frac{1}{3}}s_3\left(-p^{\frac{1}{3}}\right)$

№	$f(t)$	$\bar{f}(p) = p\int\limits_0^\infty e^{-pt} f(t)\,dt$
11.66	$t^{\frac{3}{2}} J_{-\frac{1}{4}}(at^2), \quad a>0$	$-\frac{\sqrt{\pi}}{8a^2} p^{\frac{5}{2}} \left[\mathbf{H}_{-\frac{3}{4}}\left(\frac{p^2}{4a}\right) - Y_{-\frac{3}{4}}\left(\frac{p^2}{4a}\right)\right]$
11.67	$t^{\frac{3}{2}} J_{-\frac{3}{4}}(at^2), \quad a>0$	$\frac{\sqrt{\pi}}{8a^2} p^{\frac{5}{2}} \left[\mathbf{H}_{-\frac{1}{4}}\left(\frac{p^2}{4a}\right) - Y_{-\frac{1}{4}}\left(\frac{p^2}{4a}\right)\right]$
11.68	$\sqrt{t}\, J_{\frac{1}{8}}\left(\frac{t^2}{16}\right) J_{-\frac{1}{8}}\left(\frac{t^2}{16}\right)$	$\frac{\sqrt{\pi}}{2} p^{\frac{3}{2}} \sec\left(\frac{\pi}{8}\right) H^{(1)}_{\frac{1}{8}}(p^2)\, H^{(2)}_{\frac{1}{8}}(p^2)$
11.69	$\sqrt{t}\, J_{\nu+\frac{1}{8}}\left(\frac{t^2}{16}\right) J_{\nu-\frac{1}{8}}\left(\frac{t^2}{16}\right)$, $\operatorname{Re}\nu > -\frac{3}{8}$	$\frac{1}{\pi}\sqrt{\frac{2}{\pi p}}\,\Gamma\left(\nu+\frac{3}{8}\right)\Gamma\left(\nu+\frac{5}{8}\right) \times W_{-\nu, \frac{1}{8}}\left(2e^{\frac{i\pi}{2}} p^2\right) \times W_{-\nu, \frac{1}{8}}\left(2e^{-\frac{i\pi}{2}} p^2\right)$
11.70	$J_0(a\sqrt{t^2+2bt})$	$\frac{p}{\sqrt{p^2+a^2}} e^{b(p-\sqrt{p^2+a^2})}$
11.71	$\frac{t^{\frac{\nu}{2}} J_\nu(a\sqrt{t^2+2bt})}{(t+2b)^{\frac{\nu}{2}}}, \quad \operatorname{Re}\nu > -1$	$\frac{p}{\sqrt{p^2+a^2}} e^{b(p-\sqrt{p^2+a^2})} \times \frac{a^\nu}{(p+\sqrt{p^2+a^2})^\nu}$
11.72	$\frac{1}{t} J_\nu\left(\frac{1}{t}\right)$	$2pJ_\nu(\sqrt{2p})\, K_\nu(\sqrt{2p})$
11.73	0 при $0 < t < \alpha$; $J_0(a\sqrt{t^2-\alpha^2})$ при $t > \alpha$	$\frac{p}{\sqrt{p^2+a^2}} e^{-\alpha\sqrt{p^2+a^2}}, \quad \operatorname{Re} p > \lvert\operatorname{Im} a\rvert$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
11.74	0 при $0<t<\alpha$ $tJ_0(a\sqrt{t^2-\alpha^2})$ при $t>\alpha$	$\frac{p^2}{(p^2+a^2)^{\frac{3}{2}}}(\alpha\sqrt{p^2+a^2}+1)\times$ $\times e^{-\alpha\sqrt{p^2+a^2}}$, $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
11.75	0 при $0<t<\alpha$ $\frac{J_0(a\sqrt{t^2-\alpha^2})}{t-\lambda}$ при $t>\alpha$ $\lvert\arg(\alpha-\lambda)\rvert<\pi$	$-pe^{-\alpha\sqrt{p^2+a^2}}\times$ $\times\int_0^\infty e^{-u}\left[u^2-2(\lambda p-\alpha\sqrt{p^2+a^2})u+\right.$ $\left.+\lambda^2(\sqrt{p^2+a^2}-p)^2\right]^{-\frac{1}{2}}du$ $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
11.76	0 при $0<t<\alpha$ $\sqrt{t^2-\alpha^2}\,J_1(a\sqrt{t^2-\alpha^2})$ при $t>\alpha$	$\frac{ap}{(p^2+a^2)^{\frac{3}{2}}}(\alpha\sqrt{p^2+a^2}+1)\times$ $\times e^{-\alpha\sqrt{p^2+a^2}}$, $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
11.77	0 при $0<t<\alpha$ $\frac{J_1(a\sqrt{t^2-\alpha^2})}{\sqrt{t^2-\alpha^2}}$ при $t>\alpha$	$\frac{p}{\alpha a}\left(e^{-\alpha p}-e^{-\alpha\sqrt{p^2+a^2}}\right)$ $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
11.78	0 при $0<t<\alpha$ $\frac{J_\nu(a\sqrt{t^2-\alpha^2})}{\sqrt{t^2-\alpha^2}}$ при $t>\alpha$, $\operatorname{Re}\nu>-1$	$pI_{\frac{\nu}{2}}\left[\frac{\alpha}{2}(\sqrt{p^2+a^2}-p)\right]\times$ $\times K_{\frac{\nu}{2}}\left[\frac{\alpha}{2}(\sqrt{p^2+a^2}+p)\right]$ $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
11.79	0 при $0<t<\beta$ $\frac{tJ_1(\alpha\sqrt{t^2-\beta^2})}{\sqrt{t^2-\beta^2}}$ при $t>\beta$	$\frac{p}{\alpha}e^{-\beta p}-\frac{p^2}{\alpha\sqrt{p^2+\alpha^2}}e^{-\beta\sqrt{p^2+\alpha^2}}$ $\operatorname{Re}p>\lvert\operatorname{Im}\alpha\rvert$

№	$f(t)$	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
11.80	0 при $0<t<a$ $\dfrac{(t-a)^{\frac{\nu}{2}}}{(t+a)^{\frac{\nu}{2}}}J_\nu(\alpha\sqrt{t^2-a^2})$ при $t>a$ $\operatorname{Re}\nu>-1$	$\dfrac{\alpha^\nu p\exp(-a\sqrt{p^2+\alpha^2})}{\sqrt{p^2+\alpha^2}\,(p+\sqrt{p^2+\alpha^2})^\nu}$ $\operatorname{Re}p>\lvert\operatorname{Im}\alpha\rvert$
11.81	0 при $0<t<a$ $(t^2-a^2)^{\frac{\nu}{2}}J_\nu(\alpha\sqrt{t^2-a^2})$ при $t>a$ $\operatorname{Re}\nu>-1$	$\sqrt{\dfrac{2}{\pi}}\,\dfrac{\alpha^\nu a^{\nu+\frac{1}{2}}p}{(p^2+\alpha^2)^{\frac{1}{2}\left(\nu+\frac{1}{2}\right)}}\times$ $\times K_{\nu+\frac{1}{2}}(a\sqrt{p^2+\alpha^2})$ $\operatorname{Re}p>\lvert\operatorname{Im}\alpha\rvert$
11.82	0 при $0<t<a$ $(t^2-a^2)^\mu J_{2\nu}(\alpha\sqrt{t^2-a^2})$ при $t>a$ $\operatorname{Re}(\mu+\nu)>-1$	$\sum\limits_{n=0}^\infty\dfrac{(-1)^n(\alpha a)^{2\nu+2n}(2a)^{2\mu+1}}{\sqrt{\pi}\,2^{\mu+\nu+n+\frac{1}{2}}n!}\times$ $\times\dfrac{\Gamma(\mu+\nu+n+1)}{\Gamma(2\nu+n+1)\,p^{\mu+\nu+n-\frac{1}{2}}}\times$ $\times K_{\mu+\nu+n+\frac{1}{2}}(ap),\quad \operatorname{Re}p>\lvert\operatorname{Im}\alpha\rvert$
11.83	$J_0[\alpha\sqrt{t^2+\beta t}],\quad \lvert\arg\beta\rvert<\pi$	$\dfrac{p}{\sqrt{p^2+\alpha^2}}\exp[\beta(p-\sqrt{p^2+\alpha^2})]$ $\operatorname{Re}p>\lvert\operatorname{Im}\alpha\rvert$
11.84	$(t^2+\beta t)^{\frac{\nu}{2}}J_\nu[\alpha\sqrt{t^2+\beta t}]$ $\operatorname{Re}\nu>-1,\quad\lvert\arg\beta\rvert<\pi$	$\dfrac{\left(\frac{\alpha}{2}\right)^\nu}{\sqrt{\pi}}\left(\dfrac{\beta}{\sqrt{p^2+\alpha^2}}\right)^{\nu+\frac{1}{2}}p\times$ $\times\exp\left(\frac{1}{2}\beta p\right)\times$ $\times K_{\nu+\frac{1}{2}}\left(\frac{1}{2}\beta\sqrt{p^2+\alpha^2}\right)$ $\operatorname{Re}p>\lvert\operatorname{Im}\alpha\rvert$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
11.85	$\left(\frac{t}{t+\beta}\right)^{\frac{\nu}{2}} J_\nu(\alpha\sqrt{t^2+\beta t})$ $\operatorname{Re}\nu>-1,\quad \lvert\arg\beta\rvert<\pi$	$\alpha^\nu\frac{p}{\sqrt{p^2+\alpha^2}}\times$ $\times\frac{\exp\left[\frac{1}{2}\beta\left(p-\sqrt{p^2+\alpha^2}\right)\right]}{\left(p+\sqrt{p^2+\alpha^2}\right)^\nu}$ $\operatorname{Re}p>\lvert\operatorname{Im}\alpha\rvert$
11.86	$\frac{t^{\frac{\nu}{2}-1}}{(t+1)^{\frac{\nu}{2}}}J_\nu[\alpha\sqrt{t^2+t}],\qquad \operatorname{Re}\nu>0$	$\left(\frac{2}{\alpha}\right)^\nu p\gamma\left(\nu,\frac{\sqrt{p^2+\alpha^2}-p}{2}\right)$ $\operatorname{Re}p>\lvert\operatorname{Im}\alpha\rvert$
11.87	$t^{\lambda-\frac{1}{2}\nu-1}(t+1)^{-\frac{\nu}{2}}J_\nu(\alpha\sqrt{t^2+t})$ $\operatorname{Re}\nu+1>\operatorname{Re}\lambda>0$	$\left(\frac{2}{\alpha}\right)^\nu\frac{p}{\Gamma(\nu-\lambda+1)}\times$ $\times\int\limits_0^{\frac{\sqrt{p^2+\alpha^2}-p}{2}} e^{-u}u^{\lambda-1}\times$ $\times\left(\frac{\alpha^2}{4}-pu-u^2\right)^{\nu-\lambda}du$ $\operatorname{Re}p>\lvert\operatorname{Im}\alpha\rvert$
11.88	$(t^2+2it)^{\frac{\nu}{2}}J_\nu[\alpha\sqrt{t^2+2it}]$ $\operatorname{Re}\nu>-1$	$-i\sqrt{\frac{\pi}{2}}\frac{\alpha^\nu p e^{ip}}{(p^2+\alpha^2)^{\frac{1}{2}\left(\nu+\frac{1}{2}\right)}}\times$ $\times H^{(2)}_{\nu+\frac{1}{2}}(\sqrt{p^2+\alpha^2}),\ \operatorname{Re}p>\lvert\operatorname{Im}\alpha\rvert$
11.89	$(t^2+2it)^{\lambda-\frac{\nu}{2}}J_\nu(\alpha\sqrt{t^2+2it})$ $\operatorname{Re}\lambda>-1$	$\frac{2^{\lambda-\nu-\frac{1}{2}}\sqrt{\pi}\,\Gamma(\lambda+1)\,pe^{ip}}{i(p^2+\alpha^2)^{\frac{1}{2}\left(\lambda+\frac{1}{2}\right)}\Gamma(\nu-\lambda)}\times$ $\times\sum\limits_{n=0}^{\infty}\frac{\Gamma(\nu-\lambda+n)}{2^n n!\,\Gamma(\nu+n+1)}\times$ $\times\frac{H^{(2)}_{\lambda+n+\frac{1}{2}}(\sqrt{p^2+\alpha^2})}{(p^2+\alpha^2)^{\frac{n}{2}}}$ $\operatorname{Re}p>\lvert\operatorname{Im}\alpha\rvert$

№	$f(t)$	$\bar{f}(p) = p\int_0^\infty e^{-pt} f(t)\,dt$
11.90	$J_\nu(2a\,\mathrm{sh}\,t)$, $\mathrm{Re}\,\nu > -1$, $a > 0$	$pI_{\frac{\nu}{2}+\frac{p}{2}}(a)K_{\frac{\nu}{2}-\frac{p}{2}}(a)$ $\mathrm{Re}\,p > -\frac{1}{2}$
11.91	$\mathrm{csch}\,(t)\,J_\nu(a\,\mathrm{csch}\,t)$, $a > 0$	$\frac{p\Gamma\left(\frac{p+\nu+1}{2}\right)}{a\,\Gamma(\nu+1)} W_{-\frac{p}{2},\,\frac{\nu}{2}}(a) \times$ $\times M_{\frac{p}{2},\,\frac{\nu}{2}}(a)$, $\mathrm{Re}\,p > -\mathrm{Re}\,\nu - 1$
11.92	$\sum_{n=0}^{\infty} J_{2\nu+2n+1}(4\sqrt{t})$	$\sqrt{\frac{\pi}{p}}\, e^{-\frac{2}{p}} I_\nu\left(\frac{2}{p}\right)$, $\mathrm{Re}\,\nu > -\frac{3}{2}$
11.93	$\int_0^t J_0(\tau)\,d\tau$	$\frac{1}{\sqrt{p^2+1}}$
11.94	$\int_0^t J_\nu(a\tau)\,d\tau$ $\mathrm{Re}\,\nu > -1$	$\frac{a^\nu}{\sqrt{p^2+a^2}\,(p+\sqrt{p^2+a^2})^\nu}$
11.95	$\int_0^t \tau^\nu J_\nu(\tau)\,d\tau$ $\mathrm{Re}\,\nu > -\frac{1}{2}$	$\frac{2^\nu\Gamma\left(\nu+\frac{1}{2}\right)}{\sqrt{\pi}\,(\sqrt{p^2+1})^{2\nu+1}}$
11.96	$\int_0^t \frac{J_\nu(2\sqrt{\tau})\,d\tau}{\sqrt{t-\tau}}$ $\mathrm{Re}\,\nu > -\frac{3}{2}$	$\sqrt{\frac{\pi}{p}}\exp\left(-\frac{2}{p}\right) I_\nu\left(\frac{2}{p}\right)$
11.97	$\int_0^t \frac{J_\nu^2(2\sqrt{\tau})\,d\tau}{\tau\sqrt{t-\tau}}$	$\frac{\sqrt{\pi p}}{\nu}\exp\left(-\frac{2}{p}\right)\times$ $\times\left[I_\nu\left(\frac{2}{p}\right) + 2\sum_{n=1}^{\infty} I_{\nu+n}\left(\frac{2}{p}\right)\right]$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
11.98	$\int_b^t \frac{J_1(a\sqrt{t^2-b^2})}{\sqrt{t^2-b^2}}\,dt$	$\frac{e^{-bp}-e^{-b\sqrt{p^2+a^2}}}{ab}$
11.99	$\int_b^t \frac{J_1(a\sqrt{\tau^2-b^2})}{\sqrt{\tau^2-b^2}}\,\tau\,d\tau$	$\frac{1}{a}\left(e^{-bp}-\frac{p}{\sqrt{p^2+a^2}}\,e^{-b\sqrt{p^2+a^2}}\right)$
11.100	$\int_t^\infty \frac{J_1(a\sqrt{\tau^2-b^2})}{\sqrt{\tau^2-b^2}}\,\tau\,d\tau$	$\frac{p}{a\sqrt{p^2+a^2}}\,e^{-b\sqrt{p^2+a^2}}$
11.101	$\int_t^\infty \frac{J_1(a\sqrt{\tau^2-b^2})}{\sqrt{\tau^2-b^2}}\,d\tau$	$\frac{e^{-b\sqrt{p^2+a^2}}-e^{-b(p+a)}}{ab}$
11.102	$\int_t^\infty e^{-c\tau}\frac{J_1(a\sqrt{\tau^2-b^2})}{\sqrt{\tau^2-b^2}}\,d\tau$	$\frac{e^{-b\sqrt{(p+c)^2+a^2}}-e^{-b(p+\sqrt{a^2+c^2})}}{ab}$
11.103	$\frac{1}{\sqrt{t}}\int_0^\infty e^{-\frac{x^2}{4b^2t}}J_\nu(2\sqrt{x})\,x^{\frac{\nu}{2}}\,dx$	$b^{\nu+1}\sqrt{\pi}\,p^{-\frac{\nu}{2}}e^{-\frac{b}{\sqrt{p}}}$
11.104	$\frac{\exp\left(-\frac{b^2}{4t}\right)}{\sqrt{t}}-\frac{b}{\sqrt{t}}\int_b^\infty e^{-\frac{x^2}{4t}}\frac{J_1(\sqrt{x^2-b^2})}{\sqrt{x^2-b^2}}\,dx$	$\sqrt{\pi p}\,e^{-b\sqrt{p+1}}$
11.105	$t^{\frac{\nu}{2}}J_\nu(2\sqrt{bt})-bt^{\frac{\nu}{2}}\int_b^\infty \frac{J_\nu(2\sqrt{tx})\,J_1(\sqrt{x^2-b^2})}{\sqrt{x^2-b^2}}\,dx$	$\frac{b^{\frac{\nu}{2}}\exp\left(-\frac{\sqrt{p^2+1}}{bp}\right)}{p^\nu}$

5В Зак. 1125

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
11.106	$\exp[ia(1-e^{-t})]\,J_\nu(ae^{-t})$	$J_\nu(a)\frac{p}{p+\nu}+2p\sum\limits_{n=1}^{\infty}i^n\frac{(\nu-p+1)_{n-1}}{(\nu+p)_{n+1}}\times(\nu+n)\,J_{\nu+n}(a)$, $\operatorname{Re}p>-\operatorname{Re}\nu$
11.107	$\sin[a(1-e^{-t})]\,J_\nu(ae^{-t})$	$2p\sum\limits_{n=0}^{\infty}\frac{(-1)^n(\nu-p+1)_{2n}}{(\nu+p)_{2n+2}}\times(\nu+2n-1)\,J_{\nu+2n+1}(a)$ $\operatorname{Re}p>-\operatorname{Re}\nu$
11.108	$\cos[a(1-e^{-t})]\,J_\nu(ae^{-t})$	$J_\nu(a)\frac{p}{p+\nu}+2p\sum\limits_{n=0}^{\infty}(-1)^n\frac{(\nu-p+1)_{2n-1}}{(\nu+p)_{2n+1}}\times(\nu+2n)\,J_{\nu+2n}(a)$, $\operatorname{Re}p>-\operatorname{Re}\nu$
11.109	$J_\mu(ae^{-t})\,J_\nu[a(1-e^{-t})]$ $\operatorname{Re}\nu>-1$	$\left(\frac{2}{a}\right)^p\sum\limits_{n=0}^{\infty}\frac{(-1)^n p\Gamma(p+n)}{(\mu+n)\,n!\,\mathrm{B}(p,\mu+n)}\times J_{\mu+\nu+p+2n}(a)$, $\operatorname{Re}p>-\operatorname{Re}\mu$
11.110	$(1-e^{-t})^{\frac{\nu}{2}}J_\nu(a\sqrt{1-e^{-t}})$ $\operatorname{Re}\nu>-1$	$p\Gamma(p)\left(\frac{2}{a}\right)^p J_{\nu+p}(a)$
11.111	$\dfrac{J_\nu(a\sqrt{1-e^{-t}})}{(1-e^{-t})^{\frac{\nu}{2}}}$	$\dfrac{ps_{\nu+p-1,\,p-\nu}(a)}{2^\nu a^p\,\Gamma(\nu)}$
11.112	$(e^t-1)^{\frac{\nu}{2}}J_\nu(2a\sqrt{e^t-1})$ $\operatorname{Re}\nu>-1,\ a>0$	$\dfrac{2pa^p}{\Gamma(p+1)}K_{\nu-p}(2a)$ $\operatorname{Re}p>\frac{1}{2}\operatorname{Re}\nu-\frac{3}{4}$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
11.113	$(e^t-1)^\mu J_{2\nu}\left(2a\sqrt{e^t-1}\right)$, $\operatorname{Re}(\mu+\nu)>-1,\quad a>0$	$\frac{a^{2\nu}pB(\mu+\nu+1,\ p-\mu-\nu)}{\Gamma(2\nu+1)}\times$ $\times {}_1F_2(\mu+\nu+1;\ \mu+\nu+1-p,$ $2\nu+1;\ a^2)+\frac{pa^{2p-2}\Gamma(\mu+\nu-p)}{\Gamma(\nu-\mu+p+1)}\times$ $\times {}_1F_2(p+1;\ p+1+\nu-\mu,\ p+1-$ $-\mu-\nu;\ a^2),\quad \operatorname{Re}p>\operatorname{Re}\mu-\frac{7}{4}$
11.114	$\csc\left(\frac{t}{2}\right)\exp\left(\frac{a-be^t}{e^t-1}\right)\times$ $\times J_{2\nu}\left[\frac{\sqrt{ab}}{\operatorname{sh}\left(\frac{t}{2}\right)}\right],\quad \operatorname{Re}a>0,$ $\operatorname{Re}b>0$	$\frac{2p\Gamma\left(p+\nu+\frac{1}{2}\right)}{\sqrt{ab}\,\Gamma(2\nu+1)}\times$ $\times\exp\left[-\frac{1}{2}(a+b)\right]\times$ $\times W_{-p,\nu}(b)M_{p,\nu}(a),$ $\operatorname{Re}p>-\operatorname{Re}\nu-\frac{1}{2}$
11.115	$J_n^{(k)}(t)$	$2^k\frac{p(p^2+1)^{\frac{k-1}{2}}}{\left(p+\sqrt{p^2+1}\right)^n}$
11.116	$\int\limits^t J_0(2\sqrt{(t-\tau)\tau})J_0(2\sqrt{\alpha\tau})\,d\tau$	$\frac{p}{p^2+1}\exp\left(-\frac{\alpha p}{p^2+1}\right)$
11.117	$\sum\limits_{k=0}^\infty J_0(2\sqrt{kt})$	$\frac{1}{1-\exp\left(-\frac{1}{p}\right)}$
11.118	$\int\limits_0^t e^{-au}\left(\frac{t-u}{\alpha}\right)^{\frac{n}{2}}J_n[2\sqrt{\alpha(t-u)}]\,du$	$\frac{\exp\left(-\frac{\alpha}{p}\right)}{p^n(p+a)}$
11.119	$J_0\left(\frac{at}{2}\right)\left[J_0\left(\frac{at}{2}\right)-at\,J_1\left(\frac{at}{2}\right)\right]$	$\frac{2}{\pi}\frac{p}{\sqrt{p^2+a^2}}E\left(\frac{a}{\sqrt{p^2+a^2}}\right)$
11.120	$Y_0(at)$	$-\frac{2}{\pi}\frac{p}{\sqrt{p^2+a^2}}\operatorname{Arsh}\left(\frac{p}{a}\right)$ $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
11.121	$Y_\nu(at),\quad \lvert\operatorname{Re}\nu\rvert<1$	$a^\nu\operatorname{ctg}(\nu\pi)\times\dfrac{p}{\sqrt{p^2+a^2}\,(p+\sqrt{p^2+a^2})^\nu}-\dfrac{\csc(\nu\pi)}{a^\nu}\dfrac{p}{\sqrt{p^2+a^2}}\times(p+\sqrt{p^2+a^2})^\nu,\quad \operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
11.122	$tY_0(at)$	$\dfrac{2}{\pi}\dfrac{p}{p^2+a^2}\left[1-\dfrac{p}{\sqrt{p^2+a^2}}\times\ln\left(\dfrac{p+\sqrt{p^2+a^2}}{a}\right)\right]$ $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
11.123	$tY_1(at)$	$-\dfrac{2}{\pi}\dfrac{p}{p^2+a^2}\left[\dfrac{p}{a}+\dfrac{a}{\sqrt{p^2+a^2}}\times\ln\left(\dfrac{p+\sqrt{p^2+a^2}}{a}\right)\right]$ $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
11.124	$t^\mu Y_\nu(at),\quad \operatorname{Re}(\mu\pm\nu)>-1$	$\dfrac{p}{(p^2+a^2)^{\frac{\mu+1}{2}}}\left[\Gamma(\mu+\nu+1)\operatorname{ctg}(\nu\pi)\times P_\mu^{-\nu}\left(\dfrac{p}{\sqrt{p^2+a^2}}\right)-\Gamma(\mu-\nu+1)\csc(\nu\pi)\times P_\mu^{\nu}\left(\dfrac{p}{\sqrt{p^2+a^2}}\right)\right],\quad \operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
11.125	$\dfrac{Y_{2\nu}(2\sqrt{at})}{\sqrt{t}},\quad \lvert\operatorname{Re}\nu\rvert<\dfrac{1}{2}$	$-\sqrt{\pi p}\exp\left(-\dfrac{a}{2p}\right)\times\left[\operatorname{tg}(\nu\pi)I_\nu\left(\dfrac{a}{2p}\right)+\dfrac{\sec(\nu\pi)}{\pi}\times K_\nu\left(\dfrac{a}{2p}\right)\right]$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
11.126	$t^{\mu-\frac{1}{2}}Y_{2\nu}(2\sqrt{at})$ $\operatorname{Re}(\mu\pm\nu)>-\frac{1}{2}$	$\frac{1}{\sqrt{a}}p^{1-\mu}\exp\left(-\frac{a}{2p}\right)\times$ $\times\left\{\frac{\operatorname{tg}[(\mu-\nu)\pi]\,\Gamma\left(\mu+\nu+\frac{1}{2}\right)}{\Gamma(2\nu+1)}\times\right.$ $\times M_{\mu,\nu}\left(\frac{a}{p}\right)-\sec[(\mu-\nu)\pi]\times$ $\left.\times W_{\mu,\nu}\left(\frac{a}{p}\right)\right\}$
11.127	$Y_{\frac{1}{2}}(t)$	$-\frac{p}{\sqrt{p^2+1}}\left(p+\sqrt{p^2+1}\right)^{\frac{1}{2}}$
11.128	$Y_{-\frac{1}{2}}(t)$	$\frac{p}{\sqrt{p^2+1}}\left(p+\sqrt{p^2+1}\right)^{-\frac{1}{2}}$
11.129	$\sqrt{t}\,Y_{\frac{1}{2}}(t)$	$-\sqrt{\frac{2}{\pi}}\frac{p^2}{p^2+1}$
11.130	$\sqrt{t}\,Y_{-\frac{1}{2}}(t)$	$\sqrt{\frac{2}{\pi}}\frac{p}{p^2+1}$
11.131	$\frac{Y_0(a\sqrt{t})}{\sqrt{t}}$	$-\sqrt{\frac{p}{\pi}}\exp\left(-\frac{a^2}{8p}\right)K_0\left(\frac{a^2}{8p}\right)$
11.132	$Y_0\left(a\sqrt{t^2-b^2}\right)$	$-\frac{2pe^{-b\sqrt{p^2+a^2}}}{\pi\sqrt{p^2+a^2}}\times$ $\times\ln\left(\frac{p+\sqrt{p^2+a^2}}{a}\right)$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
11.133	$t^{\mu-1}Y_\nu(at),\quad \mathrm{Re}\,\mu>\lvert\mathrm{Re}\,\nu\rvert$	$\frac{a^\nu\Gamma(\mu+\nu)\,p\,\mathrm{ctg}(\nu\pi)}{2^\nu\Gamma(\nu+1)(p^2+a^2)^{\frac{\mu+\nu}{2}}}\times$ $\times{}_2F_1\left(\frac{\mu+\nu}{2},\ \frac{1-\mu+\nu}{2};\ \nu+1;\ \frac{a^2}{p^2+a^2}\right)-\frac{2^\nu\Gamma(\mu-\nu)\,p\csc(\nu\pi)}{a^\nu\Gamma(1-\nu)(p^2+a^2)^{\frac{\mu-\nu}{2}}}\times$ $\times{}_2F_1\left(\frac{\mu-\nu}{2},\ \frac{1-\mu-\nu}{2};\ 1-\nu;\ \frac{a^2}{p^2+a^2}\right),\quad \mathrm{Re}(p+ia)>0$ $\mathrm{Re}(p-ia)>0$
11.134	$\frac{1}{t}Y_\nu\left(\frac{1}{t}\right)$	$2pY_\nu(\sqrt{2p})\,K_\nu(\sqrt{2p})$
11.135	$\ln aJ_0(at)-\frac{\pi}{2}Y_0(at)$	$\frac{p}{\sqrt{p^2+a^2}}\ln(p+\sqrt{p^2+a^2})$
11.136	0 при $t<\alpha$ $\ln a\,J_0(a\sqrt{t^2-\alpha^2})-\frac{\pi}{2}Y_0(a\sqrt{t^2-\alpha^2})$ при $t>\alpha$	$\frac{pe^{-\alpha\sqrt{p^2+a^2}}\ln(p+\sqrt{p^2+a^2})}{\sqrt{p^2+a^2}}$
11.137	0 при $0<t<\alpha$ $\left(\frac{t-\alpha}{t+\alpha}\right)^{\frac{\nu}{2}}Y_\nu(a\sqrt{t^2-\alpha^2})$ при $t>\alpha$	$\frac{p\exp(-\alpha\sqrt{p^2+a^2})}{\sqrt{p^2+a^2}}\times$ $\times\left[\mathrm{ctg}(\nu\pi)\frac{a^\nu}{(p+\sqrt{p^2+a^2})^\nu}-\frac{(p+\sqrt{p^2+a^2})^\nu}{a^\nu\sin(\nu\pi)}\right]$

§ 12. Функции Бесселя третьего рода (функции Ханкеля)

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
12.1	$H_0^{(1)}(at)$	$\frac{p}{\sqrt{p^2+a^2}}-\frac{2i}{\pi}\frac{p}{\sqrt{p^2+a^2}}\operatorname{Arsh}\left(\frac{p}{a}\right)$
12.2	$H_0^{(2)}(at)$	$\frac{p}{\sqrt{p^2+a^2}}+\frac{2i}{\pi}\frac{p}{\sqrt{p^2+a^2}}\operatorname{Arsh}\left(\frac{p}{a}\right)$
12.3	$H_\nu^{(1)}(at), \quad \lvert\operatorname{Re}\nu\rvert<1$	$i\frac{p}{\sqrt{p^2+a^2}}\csc(\nu\pi)\times \left\{e^{-i\nu\pi}\frac{a^\nu}{(p+\sqrt{p^2+a^2})^\nu}-\frac{(p+\sqrt{p^2+a^2})^\nu}{a^\nu}\right\}$
12.4	$H_\nu^{(2)}(at), \quad \lvert\operatorname{Re}\nu\rvert<1$	$i\frac{p}{\sqrt{p^2+a^2}}\csc(\nu\pi)\times \left\{\frac{(p+\sqrt{p^2+a^2})^\nu}{a^\nu}-e^{i\nu\pi}\frac{a^\nu}{(p+\sqrt{p^2+a^2})^\nu}\right\}$
12.5	$H_{\frac{1}{2}}^{(1)}(at)$	$\frac{p}{\sqrt{p^2+a^2}}\sqrt{\frac{a}{p+\sqrt{p^2+a^2}}}\times\left[1-i\frac{p+\sqrt{p^2+a^2}}{a}\right]$
12.6	$H_{\frac{1}{2}}^{(2)}(at)$	$\frac{p}{\sqrt{p^2+a^2}}\sqrt{\frac{a}{p+\sqrt{p^2+a^2}}}\times\left[1+i\frac{p+\sqrt{p^2+a^2}}{a}\right]$
12.7	$H_{-\frac{1}{2}}^{(1)}(at)$	$\frac{p}{\sqrt{p^2+a^2}}\sqrt{\frac{p+\sqrt{p^2+a^2}}{a}}\times\left[1+i\frac{a}{p+\sqrt{p^2+a^2}}\right]$

№	$f(t)$	$\bar{f}(p) = p\int\limits_0^\infty e^{-pt} f(t)\,dt$
12.8	$H^{(2)}_{-\frac{1}{2}}(at)$	$\frac{p}{\sqrt{p^2+a^2}}\sqrt{\frac{p+\sqrt{p^2+a^2}}{a}}\times \left[1-i\frac{a}{p+\sqrt{p^2+a^2}}\right]$
12.9	$tH_0^{(1)}(at)$	$\frac{p^2}{(p^2+a^2)^{\frac{3}{2}}}\left(1-\frac{2i}{\pi}\times \ln\frac{p+\sqrt{p^2+a^2}}{a}\right)+\frac{2i}{\pi}\frac{p}{p^2+a^2}$
12.10	$tH_0^{(2)}(at)$	$\frac{p^2}{(p^2+a^2)^{\frac{3}{2}}}\left(1+\frac{2i}{\pi}\times \ln\frac{p+\sqrt{p^2+a^2}}{a}\right)-\frac{2i}{\pi}\frac{p}{p^2+a^2}$
12.11	$\sqrt{t}\,H^{(1)}_{\frac{1}{2}}(at)$	$\sqrt{\frac{2}{\pi a}}\frac{p}{p^2+a^2}(a-ip)$
12.12	$\sqrt{t}\,H^{(2)}_{\frac{1}{2}}(at)$	$\sqrt{\frac{2}{\pi a}}\frac{p}{p^2+a^2}(a+ip)$
12.13	$\sqrt{t}\,H^{(1)}_{-\frac{1}{2}}(at)$	$\sqrt{\frac{2}{\pi a}}\frac{p}{p^2+a^2}(p+ia)$
12.14	$\sqrt{t}\,H^{(2)}_{-\frac{1}{2}}(at)$	$\sqrt{\frac{2}{\pi a}}\frac{p}{p^2+a^2}(p-ia)$
12.15	$tH_1^{(1)}(at)$	$\frac{p}{p^2+a^2}\left[\frac{a}{\sqrt{p^2+a^2}}\left(1-\frac{2i}{\pi}\times \ln\frac{p+\sqrt{p^2+a^2}}{a}\right)-\frac{2ip}{\pi a}\right]$
12.16	$tH_1^{(2)}(at)$	$\frac{p}{p^2+a^2}\left[\frac{a}{\sqrt{p^2+a^2}}\left(1+\frac{2i}{\pi}\times \ln\frac{p+\sqrt{p^2+a^2}}{a}\right)+\frac{2ip}{\pi a}\right]$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
12.17	$\dfrac{H_0^{(1)}(a\sqrt{t})}{\sqrt{t}}$	$\sqrt{\pi p}\exp\left(-\dfrac{a^2}{8p}\right)\times$ $\times\left[I_0\left(\dfrac{a^2}{8p}\right)-\dfrac{i}{\pi}K_0\left(\dfrac{a^2}{8p}\right)\right]$
12.18	$\dfrac{H_0^{(2)}(a\sqrt{t})}{\sqrt{t}}$	$\sqrt{\pi p}\exp\left(-\dfrac{a^2}{8p}\right)\times$ $\times\left[I_0\left(\dfrac{a^2}{8p}\right)+\dfrac{i}{\pi}K_0\left(\dfrac{a^2}{8p}\right)\right]$
12.19	$H_0^{(1)}(a\sqrt{t^2-b^2})$	$\dfrac{pe^{-b\sqrt{p^2+a^2}}}{\sqrt{p^2+a^2}}\times$ $\times\left[1-\dfrac{2i}{\pi}\ln\dfrac{p+\sqrt{p^2+a^2}}{a}\right]$
12.20	$H_0^{(2)}(a\sqrt{t^2-b^2})$	$\dfrac{pe^{-b\sqrt{p^2+a^2}}}{\sqrt{p^2+a^2}}\times$ $\times\left[1+\dfrac{2i}{\pi}\ln\dfrac{p+\sqrt{p^2+a^2}}{a}\right]$
12.21	$tH_0^{(1)}(a\sqrt{t^2-b^2})$	$\dfrac{pe^{-b\sqrt{p^2+a^2}}}{p^2+a^2}\left[p\left(b+\dfrac{1}{\sqrt{p^2+a^2}}\right)\times\right.$ $\left.\times\left(1-\dfrac{2i}{\pi}\ln\dfrac{p+\sqrt{p^2+a^2}}{a}\right)+\dfrac{2i}{\pi}\right]$
12.22	$tH_0^{(2)}(a\sqrt{t^2-b^2})$	$\dfrac{pe^{-b\sqrt{p^2+a^2}}}{p^2+a^2}\left[p\left(b+\dfrac{1}{\sqrt{p^2+a^2}}\right)\times\right.$ $\left.\times\left(1+\dfrac{2i}{\pi}\ln\dfrac{p+\sqrt{p^2+a^2}}{a}\right)-\dfrac{2i}{\pi}\right]$
12.23	$\sqrt{t^2-b^2}\,H_0^{(1)}(a\sqrt{t^2-b^2})$	$\dfrac{pe^{-b\sqrt{p^2+a^2}}}{p^2+a^2}\left[a\left(b+\dfrac{1}{\sqrt{p^2+a^2}}\right)\times\right.$ $\left.\times\left(1-\dfrac{2i}{\pi}\ln\dfrac{p+\sqrt{p^2+a^2}}{a}\right)-\dfrac{2ip}{\pi a}\right]$

№	$f(t)$	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
12.24	$\sqrt{t^2-b^2}\,H_0^{(2)}(a\sqrt{t^2-b^2})$	$\frac{pe^{-b\sqrt{p^2+a^2}}}{p^2+a^2}\left[a\left(b+\frac{1}{\sqrt{p^2+a^2}}\right)\times\right.$ $\left.\times\left(1+\frac{2i}{\pi}\ln\frac{p+\sqrt{p^2+a^2}}{a}\right)+\frac{2ip}{\pi a}\right]$
12.25	$\frac{H_{2\nu}^{(1)}(2\sqrt{at})}{\sqrt{t}}, \quad \lvert\operatorname{Re}\nu\rvert<\frac{1}{2}$	$\sqrt{\pi p}\sec(\nu\pi)\exp\left(-\frac{a}{2p}\right)\times$ $\times\left[e^{-i\nu\pi}I_\nu\left(\frac{a}{2p}\right)-\frac{i}{\pi}K_\nu\left(\frac{a}{2p}\right)\right]$
12.26	$\frac{H_{2\nu}^{(2)}(2\sqrt{at})}{\sqrt{t}}, \quad \lvert\operatorname{Re}\nu\rvert<\frac{1}{2}$	$\sqrt{\pi p}\sec(\nu\pi)\exp\left(-\frac{a}{2p}\right)\times$ $\times\left[e^{i\nu\pi}I_\nu\left(\frac{a}{2p}\right)+\frac{i}{\pi}K_\nu\left(\frac{a}{2p}\right)\right]$
12.27	$t^{-\frac{1}{2}\nu}H_\nu^{(1)}(2\sqrt{at}), \quad \operatorname{Re}\nu<1$	$\frac{p^\nu\exp\left(-\frac{a}{p}\right)}{i\pi a^{\frac{\nu}{2}}}\times$ $\times\Gamma(1-\nu)\,\Gamma\left(\nu, e^{-i\pi}\frac{a}{p}\right)$
12.28	$t^{-\frac{1}{2}\nu}H_\nu^{(2)}(2\sqrt{at}), \quad \operatorname{Re}\nu<1$	$-\frac{p^\nu\exp\left(-\frac{a}{p}\right)}{i\pi a^{\frac{\nu}{2}}}\times$ $\times\Gamma(1-\nu)\,\Gamma\left(\nu, e^{i\pi}\frac{a}{p}\right)$
12.29	$t^{\nu-\frac{1}{2}}H_1^{(1)}(2\sqrt{at}), \quad \operatorname{Re}\nu>0$	$\frac{\Gamma(\nu+1)}{ip^{\nu-1}\sin(\nu\pi)}\exp\left(-\frac{a}{2p}\right)\times$ $\times k_{-2\nu}\left(\frac{ae^{-i\pi}}{2p}\right)$
12.30	$t^{\nu-\frac{1}{2}}H_1^{(2)}(2\sqrt{at}), \quad \operatorname{Re}\nu>0$	$\frac{i\Gamma(\nu+1)}{\sin(\nu\pi)p^{\nu-1}}\exp\left(-\frac{a}{2p}\right)\times$ $\times k_{-2\nu}\left(\frac{ae^{i\pi}}{2p}\right)$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
12.31	$t^{\mu-\frac{1}{2}}H_{2\nu}^{(1)}(2\sqrt{at})$ $\mathrm{Re}(\mu\pm\nu)>-\frac{1}{2}$	$\frac{\Gamma\left(\mu+\nu+\frac{1}{2}\right)\Gamma\left(\mu-\nu+\frac{1}{2}\right)}{\pi\sqrt{a}\,e^{i\nu\pi+\frac{a}{2p}}p^{\mu-1}}\times$ $\times W_{-\mu,\nu}\left(e^{-i\pi}\frac{a}{p}\right)$
12.32	$t^{\mu-\frac{1}{2}}H_{2\nu}^{(2)}(2\sqrt{at})$ $\mathrm{Re}(\mu\pm\nu)>-\frac{1}{2}$	$\frac{\Gamma\left(\mu+\nu+\frac{1}{2}\right)\Gamma\left(\mu-\nu+\frac{1}{2}\right)}{\pi\sqrt{a}\,e^{-i\nu\pi+\frac{a}{2p}}p^{\mu-1}}\times$ $\times W_{-\mu,\nu}\left(e^{i\pi}\frac{a}{p}\right)$
12.33	$\frac{1}{t}H_\nu^{(1)}\left(\frac{1}{t}\right)$	$2pH_\nu^{(1)}(\sqrt{2p})\,K_\nu(\sqrt{2p})$
12.34	$\frac{1}{t}H_\nu^{(2)}\left(\frac{1}{t}\right)$	$2p\,H_\nu^{(2)}(\sqrt{2p})\,K_\nu(\sqrt{2p})$

§ 13. Функции Бесселя мнимого аргумента

13.1	$I_\nu(at)$, $\mathrm{Re}\,\nu>-1$	$\frac{a^\nu p}{\sqrt{p^2-a^2}\,(p+\sqrt{p^2-a^2})^\nu}$ $\mathrm{Re}\,p>\lvert\mathrm{Re}\,a\rvert$
13.2	$tI_\nu(at)$, $\mathrm{Re}\,\nu>-2$	$\frac{a^\nu(p+\nu\sqrt{p^2-a^2})}{(p+\sqrt{p^2-a^2})^\nu}\,\frac{p}{(p^2-a^2)^{\frac{3}{2}}}$ $\mathrm{Re}\,p>\lvert\mathrm{Re}\,a\rvert$
13.3	$\frac{I_1(at)}{t}$	$\frac{p(\sqrt{p+a}-\sqrt{p-a})}{\sqrt{p+a}+\sqrt{p-a}}$ $\mathrm{Re}\,p>\lvert\mathrm{Re}\,a\rvert$
13.4	$\frac{I_\nu(at)}{t}$, $\mathrm{Re}\,\nu>0$	$\frac{p}{\nu}\,\frac{a^\nu}{(p+\sqrt{p^2-a^2})^\nu}$, $\mathrm{Re}\,p>\lvert\mathrm{Re}\,a\rvert$
13.5	$\sqrt{t}\,I_{\frac{1}{2}}(t)$	$\sqrt{\frac{2}{\pi}}\,\frac{p}{p^2-1}$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
13.6	$\sqrt{t}\,I_{-\frac{1}{2}}(t)$	$\sqrt{\frac{2}{\pi}}\frac{p^2}{p^2-1}$
13.7	$I_{\frac{1}{2}}(t)$	$\frac{p}{\sqrt{p^2-1}\,(p+\sqrt{p^2-1})^{\frac{1}{2}}}$
13.8	$I_{-\frac{1}{2}}(t)$	$\frac{p}{\sqrt{p^2-1}}(p+\sqrt{p^2-1})^{\frac{1}{2}}$
13.9	$(\sqrt{t})^{-1}I_\nu(t),\quad \operatorname{Re}\nu>-\frac{1}{2}$	$\sqrt{\frac{2}{\pi}}\,pQ_{\nu-\frac{1}{2}}(p),\quad \operatorname{Re}p>1$
13.10	$t^\nu I_\nu(at),\quad \operatorname{Re}\nu>-\frac{1}{2}$	$\frac{(2a)^\nu}{\sqrt{\pi}}\Gamma\left(\nu+\frac{1}{2}\right)p\,(p^2-a^2)^{-\nu-\frac{1}{2}}$ $\operatorname{Re}p>\lvert\operatorname{Re}a\rvert$
13.11	$t^{\nu+1}I_\nu(at),\quad \operatorname{Re}\nu>-1$	$\frac{2^{\nu+1}a^\nu}{\sqrt{\pi}}\Gamma\left(\nu+\frac{3}{2}\right)\times$ $\times p^2(p^2-a^2)^{-\nu-\frac{3}{2}},\quad \operatorname{Re}p>\lvert\operatorname{Re}a\rvert$
13.12	$t^\mu I_\nu(at),\quad \operatorname{Re}(\mu+\nu)>-1$	$\Gamma(\mu+\nu+1)\frac{p}{(p^2-a^2)^{\frac{\mu+1}{2}}}\times$ $\times P_\mu^{-\nu}\left(\frac{p}{\sqrt{p^2-a^2}}\right),\quad \operatorname{Re}p>\lvert\operatorname{Re}a\rvert$
13.13	$t^2I_0(t)$	$\frac{p\,(2p^2+1)}{(p^2-1)^{\frac{5}{2}}}$
13.14	$\frac{I_\nu(t)}{t^2},\quad \operatorname{Re}\nu>1$	$\frac{p\,(2\nu\sqrt{p^2-1}-p)}{2\nu\,(4\nu^2-1)\,(p+\sqrt{p^2-1})^{2\nu}}$
13.15	$t^{\mu-\frac{1}{2}}I_{\nu+\frac{1}{2}}(at),\quad \operatorname{Re}(\mu+\nu)>-1$	$\frac{\sqrt{2}\sin(\nu\pi)}{\sqrt{\pi a}\sin[(\mu+\nu)\pi]}\frac{1}{(p^2-a^2)^{\frac{\mu}{2}}}\times$ $\times Q_\nu^\mu\left(\frac{p}{a}\right),\ \operatorname{Re}p>\lvert\operatorname{Re}a\rvert$

№	$f(t)$	$\bar{f}(p) = p\int\limits_0^\infty e^{-pt} f(t)\,dt$
13.16	$I_0^2\left(\frac{at}{2}\right)$	$\frac{2}{\pi} E\left(\frac{a}{p}\right)$
13.17	$I_\nu^2(t), \quad \operatorname{Re}\nu > -\frac{1}{2}$	$\frac{pk^{2\nu+1}}{\pi} \times$ $\times \int\limits_0^{\frac{\pi}{2}} \frac{\sin^{2\nu}\theta}{\left(\frac{1}{2} + \sqrt{1-k^2\sin\theta}\right)^{2\nu}} \times$ $\times \frac{d\theta}{\sqrt{1-k^2\sin^2\theta}} \quad \left(k = \frac{2}{p}\right)$
13.18	$tI_0\left(\frac{at}{2}\right) I_1\left(\frac{at}{2}\right)$	$\frac{2p^2E\left(\frac{a}{p}\right)}{\pi a(p^2-a^2)} - \frac{2K\left(\frac{a}{p}\right)}{\pi a}$
13.19	$\frac{I_\mu(at)\, I_\nu(bt)}{\sqrt{t}}$ $\operatorname{Re}(\mu+\nu) > -\frac{1}{2}$	$\sqrt{c}\,\Gamma\left(\mu+\nu+\frac{1}{2}\right) pP^{-\mu}_{\nu-\frac{1}{2}}(\operatorname{ch}\alpha) \times$ $\times P^{-\nu}_{\mu-\frac{1}{2}}(\operatorname{ch}\beta), \quad \operatorname{Re}(p \pm a \pm b) > 0$ $\operatorname{sh}\alpha = ac, \quad \operatorname{sh}\beta = bc, \quad \operatorname{ch}\alpha\operatorname{ch}\beta = pc$ $\lvert\operatorname{Im}\alpha\rvert < \frac{\pi}{2}, \quad \lvert\operatorname{Im}\beta\rvert < \frac{\pi}{2}$
13.20	$t^{2\lambda-1} I_{2\mu}(\alpha t)\, I_{2\nu}(\beta t),$ $\operatorname{Re}(\lambda+\mu+\nu) > 0$	$\frac{2^{2\lambda-1}\alpha^{2\mu}\beta^{2\nu}\,\Gamma(\lambda+\mu+\nu)}{\sqrt{\pi}\,p^{2\lambda+2\mu+2\nu-1}} \times$ $\times \frac{\Gamma\left(\lambda+\mu+\nu+\frac{1}{2}\right)}{\Gamma(2\mu+1)\,\Gamma(2\nu+1)} \times$ $\times F_4\left(\lambda+\mu+\nu, \lambda+\mu+\nu+\frac{1}{2};\right.$ $\left.2\mu+1,\ 2\nu+1; \frac{\alpha^2}{p^2}, \frac{\beta^2}{p^2}\right)$ $\operatorname{Re}p > \lvert\operatorname{Re}\alpha\rvert + \lvert\operatorname{Re}\beta\rvert$
13.21	$I_0(2\sqrt{at})$	$\exp\left(\frac{a}{p}\right)$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
13.22	$\dfrac{I_0\left(2^{\frac{3}{2}}\sqrt{at}\right)}{\sqrt{t}}$	$\sqrt{\pi p}\exp\left(\frac{a}{p}\right)I_0\left(\frac{a}{p}\right)$
13.23	$\dfrac{I_1(2\sqrt{at})}{\sqrt{t}}$	$\frac{p}{\sqrt{a}}\left[\exp\left(\frac{a}{p}\right)-1\right]$
13.24	$I_\nu(2\sqrt{t})$	$\frac{1}{2}\sqrt{\frac{\pi}{p}}\exp\left(\frac{1}{2p}\right)\times$ $\times\left[I_{\frac{\nu-1}{2}}\left(\frac{1}{2p}\right)-I_{\frac{\nu+1}{2}}\left(\frac{1}{2p}\right)\right]$
13.25	$\dfrac{I_\nu\left(2^{\frac{3}{2}}\sqrt{at}\right)}{\sqrt{t}}$, $\operatorname{Re}\nu>-1$	$\sqrt{\pi p}\exp\left(\frac{a}{p}\right)I_{\frac{\nu}{2}}\left(\frac{a}{p}\right)$
13.26	$t^{\frac{1}{2}\nu}I_\nu(2\sqrt{at})$. $\operatorname{Re}\nu>-1$	$a^{\frac{\nu}{2}}p^{-\nu}\exp\left(\frac{a}{p}\right)$
13.27	$t^{-\frac{1}{2}\nu}I_\nu(2\sqrt{at})$	$\frac{a^{-\frac{\nu}{2}}}{\Gamma(\nu)}p^\nu\exp\left(\frac{a}{p}\right)\gamma\left(\nu,\frac{a}{p}\right)$
13.28	$t^{\mu-\frac{1}{2}}I_{2\nu}(2\sqrt{at})$ $\operatorname{Re}(\mu+\nu)>-\frac{1}{2}$	$\dfrac{\Gamma\left(\mu+\nu+\frac{1}{2}\right)\exp\left(\frac{a}{2p}\right)}{\sqrt{a}\,\Gamma(2\nu+1)p^{\mu-1}}\times$ $\times M_{-\mu,\nu}\left(\frac{a}{p}\right)$
13.29	$I_\nu^2(\sqrt{2at})$, $\operatorname{Re}\nu>-1$	$\exp\left(\frac{a}{p}\right)I_\nu\left(\frac{a}{p}\right)$
13.30	$I_\nu(\sqrt{2at})\,I_\nu(\sqrt{2bt})$, $\operatorname{Re}\nu>-1$	$\exp\left[\frac{1}{2}(a+b)\frac{1}{p}\right]I_\nu\left(\frac{\sqrt{ab}}{p}\right)$
13.31	$\exp\left(-\frac{t^2}{16a}\right)I_0\left(\frac{t^2}{16a}\right)$, $\operatorname{Re}a\geqslant 0$	$\sqrt{\frac{2a}{\pi}}\,pe^{ap^2}K_0(ap^2)$
13.32	$I_{\nu+\frac{1}{2}}\left(\frac{t^2}{2}\right)$, $\operatorname{Re}\nu>-1$	$\frac{(-1)^\nu}{\sqrt{\pi}}\Gamma(\nu+1)\,pD_{-\nu-1}(p)\times$ $\times D_{-\nu-1}(-p)$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
13.33	$\sqrt{t}\exp\left(-\frac{t^2}{8a}\right)I_{\frac{1}{4}}\left(\frac{t^2}{8a}\right)$ $\operatorname{Re} a\geqslant 0$	$\frac{2}{\Gamma\left(\frac{1}{4}\right)}\sqrt{ap}\,e^{ap^2}\,\Gamma\left(\frac{1}{4},\,ap^2\right)$
13.34	$t^{2\nu}\exp\left(-\frac{t^2}{8a}\right)I_\nu\left(\frac{t^2}{8a}\right)$ $\operatorname{Re}\nu>-\frac{1}{4},\quad \operatorname{Re} a\geqslant 0$	$\frac{a^{\frac{\nu}{2}}\Gamma(4\nu+1)}{2^{4\nu}\Gamma(\nu+1)}p^{-\nu}\exp\left(\frac{1}{2}ap^2\right)\times$ $\times W_{-\frac{3\nu}{2},\,\frac{\nu}{2}}(ap^2)$
13.35	$\frac{1}{t}\exp\left(-\frac{\alpha+\beta}{2t}\right)I_\nu\left(\frac{\alpha-\beta}{2t}\right)$ $\operatorname{Re}\alpha\geqslant\operatorname{Re}\beta>0$	$2pK_\nu[(\sqrt{\alpha}+\sqrt{\beta})\sqrt{p}]\times$ $\times I_\nu[(\sqrt{\alpha}-\sqrt{\beta})\sqrt{p}]$
13.36	$I_\nu(2a\sqrt{t})\,J_\nu(2b\sqrt{t})$ $\operatorname{Re}\nu>-1$	$\exp\left(\frac{a^2-b^2}{p}\right)J_\nu\left(\frac{2ab}{p}\right)$
13.37	$\frac{I_\nu^2(2\sqrt{t})}{t},\quad \operatorname{Re}\nu>0$	$\frac{p}{\nu}\,e^{\frac{2}{p}}\left[I_\nu\left(\frac{2}{p}\right)+2\sum\limits_{k=1}^{\infty}I_{\nu+k}\left(\frac{2}{p}\right)\right]$
13.38	$\frac{I_{\nu+\frac{1}{2}}(t)}{\sqrt{t}}$	$\sqrt{\frac{2}{\pi}}\,pQ_\nu(p)$
13.39	$\frac{I_{2\nu}(\sqrt{8t})+J_{2\nu}(\sqrt{8t})}{\sqrt{t}}$ $\operatorname{Re}\nu>-\frac{1}{2}$	$2\sqrt{\pi p}\,I_\nu\left(\frac{1}{p}\right)\operatorname{ch}\frac{1}{p}$
13.40	$\frac{I_{2\nu}(\sqrt{8t})-J_{2\nu}(\sqrt{8t})}{\sqrt{t}}$ $\operatorname{Re}\nu>-\frac{1}{2}$	$2\sqrt{\pi p}\,I_\nu\left(\frac{1}{p}\right)\operatorname{sh}\frac{1}{p}$
13.41	$I_\nu^2(2\sqrt{t})+J_\nu^2(2\sqrt{t})$ $\operatorname{Re}\nu>-1$	$2I_\nu\left(\frac{2}{p}\right)\operatorname{ch}\frac{2}{p}$
13.42	$I_\nu^2(2\sqrt{t})-J_\nu^2(2\sqrt{t})$ $\operatorname{Re}\nu>-1$	$2I_\nu\left(\frac{2}{p}\right)\operatorname{sh}\frac{2}{p}$

№	$f(t)$	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
13.43	$\dfrac{I_\nu^2(2\sqrt{t})+J_\nu^2(2\sqrt{t})}{t}$ $\operatorname{Re}\nu>0$	$\dfrac{2p}{\nu}\operatorname{ch}\dfrac{1}{p}\left[I_\nu\left(\dfrac{2}{p}\right)+\right.$ $\left.+2\sum\limits_{k=1}^\infty I_{\nu+k}\left(\dfrac{2}{p}\right)\right]$
13.44	$\dfrac{I_\nu^2(2\sqrt{t})-J_\nu^2(2\sqrt{t})}{t}$ $\operatorname{Re}\nu>0$	$\dfrac{2p}{\nu}\operatorname{sh}\dfrac{1}{p}\left[I_\nu\left(\dfrac{2}{p}\right)+\right.$ $\left.+2\sum\limits_{k=1}^\infty I_{\nu+k}\left(\dfrac{2}{p}\right)\right]$
13.45	$I_\nu(2\sqrt{t})\,I_\nu(2\sqrt{at})+$ $+J_\nu(2\sqrt{t})\,J_\nu(2\sqrt{at})$ $\operatorname{Re}\nu>-1$	$2I_\nu\left(\dfrac{2a}{p}\right)\operatorname{ch}\dfrac{a^2+1}{p}$
13.46	$I_\nu(2\sqrt{t})\,I_\nu(2\sqrt{at})-$ $-J_\nu(2\sqrt{t})\,J_\nu(2\sqrt{at})$ $\operatorname{Re}\nu>-1$	$2I_\nu\left(\dfrac{2a}{p}\right)\operatorname{sh}\dfrac{a^2+1}{p}$
13.47	0 при $0<t<a$ $I_0(\alpha\sqrt{t^2-a^2})$ при $t>a$	$\dfrac{p}{\sqrt{p^2-\alpha^2}}\,e^{-a\sqrt{p^2-\alpha^2}}$ $\operatorname{Re}p>\lvert\operatorname{Re}\alpha\rvert$
13.48	0 при $0<t<a$ $tI_0(\alpha\sqrt{t^2-a^2})$ при $t>a$	$p^2\exp(-a\sqrt{p^2-\alpha^2})\times$ $\times\left[a(p^2-\alpha^2)^{-1}+(p^2-\alpha^2)^{-\frac{3}{2}}\right]$ $\operatorname{Re}p>\lvert\operatorname{Re}\alpha\rvert$
13.49	0 при $0<t<a$ $\sqrt{t^2-a^2}\,I_1(\alpha\sqrt{t^2-a^2})$ при $t>a$	$ape^{-a\sqrt{p^2-\alpha^2}}\times$ $\times\left[\dfrac{a}{p^2-\alpha^2}-(p^2-\alpha^2)^{-\frac{3}{2}}\right]$ $\operatorname{Re}p>\lvert\operatorname{Re}\alpha\rvert$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
13.50	0 при $0<t<a$; $\dfrac{I_1(\alpha\sqrt{t^2-a^2})}{\sqrt{t^2-a^2}}$ при $t>a$	$\dfrac{p}{\alpha a}\left(e^{-a\sqrt{p^2-\alpha^2}}-e^{-ap}\right)$ $\operatorname{Re}p>\lvert\operatorname{Re}\alpha\rvert$
13.51	0 при $0<t<a$; $\dfrac{tI_1(\alpha\sqrt{t^2-a^2})}{\sqrt{t-a^2}}$ при $t>a$	$\dfrac{p^2}{\alpha}\dfrac{1}{\sqrt{p^2-\alpha^2}}e^{-a\sqrt{p^2-\alpha^2}}-$ $-\dfrac{p}{\alpha}e^{-ap},\quad \operatorname{Re}p>\lvert\operatorname{Re}\alpha\rvert$
13.52	0 при $0<t<a$; $(t^2-a^2)^{\frac{\nu}{2}}I_\nu(\alpha\sqrt{t^2-a^2})$ при $t>a$, $\operatorname{Re}\nu>-1$	$\sqrt{\dfrac{2}{\pi}}\alpha^\nu a^{\nu+\frac{1}{2}}p\,(p^2-\alpha^2)^{-\frac{\nu}{2}-\frac{1}{4}}\times$ $\times K_{\nu+\frac{1}{2}}(a\sqrt{p^2-\alpha^2})$ $\operatorname{Re}p>\lvert\operatorname{Re}\alpha\rvert$
13.53	0 при $0<t<a$; $\left(\dfrac{t-a}{t+a}\right)^{\frac{\nu}{2}}I_\nu(\alpha\sqrt{t^2-a^2})$ при $t>a$, $\operatorname{Re}\nu>-1$	$\dfrac{\alpha^\nu p}{\sqrt{p^2-\alpha^2}}(p+\sqrt{p^2-\alpha^2})^{-\nu}\times$ $\times e^{-a\sqrt{p^2-\alpha^2}},\quad \operatorname{Re}p>\lvert\operatorname{Re}\alpha\rvert$
13.54	$e^{-t^2}I_0(t^2)$	$\dfrac{p}{\sqrt{8\pi}}\exp\left(\dfrac{p^2}{16}\right)K_0\left(\dfrac{p^2}{16}\right)$
13.55	$I_0(\alpha\sqrt{t^2+\beta t}),\quad \lvert\arg\beta\rvert<\pi$	$\dfrac{p}{\sqrt{p^2-\alpha^2}}\exp\left[\dfrac{1}{2}\beta\times\right.$ $\left.\times(p-\sqrt{p^2-\alpha^2})\right],\quad \operatorname{Re}p>\lvert\operatorname{Re}\alpha\rvert$
13.56	$(t^2+\beta t)^{\frac{\nu}{2}}I_\nu(\alpha\sqrt{t^2+\beta t})$ $\operatorname{Re}\nu>-1,\quad \lvert\arg\beta\rvert<\pi$	$\dfrac{\alpha^\nu}{2^\nu\sqrt{\pi}}p\left(\dfrac{\beta}{\sqrt{p^2-\alpha^2}}\right)^{\nu+\frac{1}{2}}\times$ $\times\exp\left(\dfrac{1}{2}\beta p\right)\times$ $\times K_{\nu+\frac{1}{2}}\left(\dfrac{1}{2}\beta\sqrt{p^2-\alpha^2}\right),$ $\operatorname{Re}p>\lvert\operatorname{Re}\alpha\rvert$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
13.57	$t^{\frac{\nu}{2}}(t+\beta)^{-\frac{\nu}{2}}I_\nu(\alpha\sqrt{t^2+\beta t})$ $\operatorname{Re}\nu>-1,\quad \lvert\arg\beta\rvert<\pi$	$\frac{\alpha^\nu p}{\sqrt{p^2-\alpha^2}}(p+\sqrt{p^2-\alpha^2})^{-\nu}\times$ $\times e^{\frac{\beta}{2}(p-\sqrt{p^2-\alpha^2})},\quad \operatorname{Re}p>\lvert\operatorname{Re}\alpha\rvert$
13.58	$t^{\mu-1}(t+\beta)^{-\mu}I_{2\nu}(\alpha\sqrt{t^2+\beta t})$ $\operatorname{Re}(\mu+\nu)>0,\quad \lvert\arg\beta\rvert<\pi$	$\frac{2\Gamma(\mu+\nu)e^{\frac{\beta p}{2}}}{\alpha\beta\Gamma(2\nu+1)}p\times$ $\times M_{\frac{1}{2}-\mu,\nu}\left(\frac{\alpha^2\beta}{2p+2\sqrt{p^2-\alpha^2}}\right)\times$ $\times W_{\frac{1}{2}-\mu,\nu}\left[\frac{\beta}{2}(p+\sqrt{p^2-\alpha^2})\right]$ $\operatorname{Re}p>\lvert\operatorname{Re}\alpha\rvert$
13.59	$e^{-at}[(1+2at)I_0(at)+2at\,I_1(at)]$	$\sqrt{1+\frac{2a}{p}}$
13.60	$e^{-\frac{at}{2}}\left[I_{\nu-1}\left(\frac{at}{2}\right)-2I_\nu\left(\frac{at}{2}\right)+\right.$ $\left.+I_{\nu+1}\left(\frac{at}{2}\right)\right],\quad \operatorname{Re}\nu>-1$	$\frac{4a^{\nu-1}p\sqrt{p}}{\sqrt{p+a}\,[\sqrt{p}+\sqrt{p+a}]^{2\nu}}$
13.61	$\frac{e^{\frac{at}{2}}I_\nu\left(\frac{at}{2}\right)}{t},\quad \operatorname{Re}\nu>0$	$\frac{a^\nu}{\nu}\frac{p}{(\sqrt{p+a}+\sqrt{p})^{2\nu}}$
13.62	$(2t-t^2)^{\frac{\nu}{2}-\frac{1}{4}}C_n^\nu(t-1)\times$ $\times I_{\nu-\frac{1}{2}}(\alpha\sqrt{2t-t^2})$ при $0<t<2$ 0 при $t>2$ $\operatorname{Re}\nu>-\frac{1}{2}$	$\frac{(-1)^n\sqrt{2\pi}\,\alpha^{\nu-\frac{1}{2}}}{(p^2+\alpha^2)^{\frac{\nu}{2}}e^p}\times$ $\times pC_n^\nu\left(\frac{p}{\sqrt{p^2+\alpha^2}}\right)I_{\nu+n}(\sqrt{p^2+\alpha^2})$

№	$f(t)$	$\bar{f}(p) = p\int\limits_0^\infty e^{-pt} f(t)\, dt$
13.63	$\exp[\alpha(1-e^{-t})]\, I_\nu(\alpha e^{-t})$	$\frac{p}{p+\nu} I_\nu(\alpha) + p\sum\limits_{n=1}^{\infty} \frac{(\nu-p+1)_{n-1}}{(\nu+p)_{n+1}} \times (\nu+n) I_{\nu+p}(\alpha)$, $\operatorname{Re} p > -\operatorname{Re} \nu$
13.64	$\sum\limits_{n=0}^{\infty} I_{2\nu+2n+1}(4\sqrt{t})$, $\operatorname{Re}\nu > -\frac{3}{2}$	$\sqrt{\frac{\pi}{p}}\, e^{\frac{2}{p}} I_\nu\left(\frac{2}{p}\right)$
13.65	$e^{-at} I_0(\beta t) + (\alpha-\beta)\int\limits_0^t e^{-\alpha t} I_0(\beta t)\, dt$	$\frac{\sqrt{p+2b}}{\sqrt{p+2a}}$, $\alpha = a+b$, $\beta = a-b$
13.66	$\int\limits_0^t I_0(a\tau)\, d\tau$	$\frac{1}{\sqrt{p^2-a^2}}$
13.67	$\int\limits_0^t \tau^\nu I_\nu(\tau)\, d\tau$, $\operatorname{Re}\nu > -\frac{1}{2}$	$\frac{2^\nu \Gamma\left(\nu+\frac{1}{2}\right)}{\sqrt{\pi}\,(p^2-1)^{\nu+\frac{1}{2}}}$
13.68	$\int\limits_b^t \frac{I_1(a\sqrt{t^2-b^2})\, dt}{\sqrt{t^2-b^2}}$	$\frac{e^{-b\sqrt{p^2-a^2}} - e^{-bp}}{ab}$
13.69	$\int\limits_b^t \frac{I_1(a\sqrt{t^2-b^2})}{\sqrt{t^2-b^2}}\, t\, dt$	$\frac{1}{a}\left(\frac{p}{\sqrt{p^2-a^2}}\, e^{-b\sqrt{p^2-a^2}} - e^{-bp}\right)$
13.70	$\int\limits_t^\infty e^{-at} \frac{I_1(a\sqrt{t^2-b^2})}{\sqrt{t^2-b^2}}\, dt$	$\frac{e^{-bp} - e^{-b\sqrt{p^2+2ap}}}{ab}$
13.71	$e^{-\alpha t} I_0(\beta\sqrt{t^2-\gamma^2}) + 2b\int\limits_\gamma^t e^{-\alpha t} I_0(\beta\sqrt{t^2-\gamma^2})\, dt$	$\sqrt{\frac{p+2b}{p+2a}}\, e^{-\gamma\sqrt{(p+2a)(p+2b)}}$; $\alpha = a+b$; $\beta = a-b$

№	$f(t)$	$\bar f(p) = p\int\limits_0^\infty e^{-pt} f(t)\,dt$
13.72	$\int\limits_\gamma^t e^{-\alpha t}\frac{I_1(\beta\sqrt{t^2-\gamma^2})}{\sqrt{t^2-\gamma^2}}\,dt$	$\frac{e^{-\gamma\sqrt{(p+2a)(p+2b)}}-e^{-\gamma(p+\alpha)}}{\beta\gamma}$ $\alpha=a+b;\quad \beta=a-b$
13.73	$\int\limits_b^t e^{-at}\frac{I_1(a\sqrt{t^2-b^2})}{\sqrt{t^2-b^2}}\,dt$	$\frac{e^{-b\sqrt{p^2+2ab}}-e^{-b(p+a)}}{ab}$
13.74	$K_0(at)$	$\frac{p}{\sqrt{p^2-a^2}}\ln\left(\frac{p+\sqrt{p^2-a^2}}{a}\right)=$ $=\frac{p}{\sqrt{p^2-a^2}}\operatorname{Arsh}\left(\frac{\sqrt{p^2-a^2}}{a}\right)$ $\operatorname{Re}p>-\operatorname{Re}a$
13.75	$K_\nu(at),\quad \lvert\operatorname{Re}\nu\rvert<1$	$\frac{\pi p}{2\sqrt{p^2-a^2}}\csc(\nu\pi)\times$ $\times\left[\frac{(p+\sqrt{p^2-a^2})^\nu}{a^\nu}-\right.$ $\left.-\frac{a^\nu}{(p+\sqrt{p^2-a^2})^\nu}\right]$ $\operatorname{Re}p>-\operatorname{Re}a$
13.76	$K_{\pm\frac{1}{2}}(t)$	$\frac{\pi p}{\sqrt{2(p+1)}}$
13.77	$\sqrt{t}\,K_{\pm\frac{1}{2}}(t)$	$\frac{p\sqrt{\pi}}{(p+1)\sqrt{2}}$
13.78	$tK_0(at)$	$\frac{p^2}{(p^2-a^2)^{\frac{3}{2}}}\ln\frac{p+\sqrt{p^2-a^2}}{a}-$ $-\frac{p}{p^2-a^2},\quad \operatorname{Re}p>-\operatorname{Re}a$
13.79	$tK_1(at)$	$\frac{p^2}{a(p^2-a^2)}-\frac{ap}{(p^2-a^2)^{\frac{3}{2}}}\times$ $\times\ln\frac{p+\sqrt{p^2-a^2}}{a},\quad \operatorname{Re}p>-\operatorname{Re}a$

№	$f(t)$	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
13.80	$t^{\mu-\frac{1}{2}}K_{\nu+\frac{1}{2}}(at)$, $\operatorname{Re}(\mu+\nu)>-1$ $\operatorname{Re}(\mu-\nu)>0$	$\dfrac{\sqrt{\pi}\,\Gamma(\mu-\nu)\,\Gamma(\mu+\nu+1)}{\sqrt{2a}}\times$ $\times\dfrac{p}{(p^2-a^2)^{\frac{\mu}{2}}}P_\nu^{-\mu}\left(\dfrac{p}{a}\right)$ $\operatorname{Re}p>-\operatorname{Re}a$
13.81	$t^\mu K_\nu(at)$, $\operatorname{Re}(\mu\pm\nu)>-1$	$\dfrac{\sin(\mu\pi)\,\Gamma(\mu-\nu+1)\,p}{\sin[(\mu+\nu)\pi]\,(p^2-a^2)^{\frac{\mu+1}{2}}}\times$ $\times Q_\mu^\nu\left(\dfrac{p}{\sqrt{p^2-a^2}}\right)$, $\operatorname{Re}p>-\operatorname{Re}a$
13.82	$\dfrac{1}{2t}\exp\left(-\dfrac{\lambda}{2at}\right)K_\nu(a\lambda t)$ $\operatorname{Re}\left(\dfrac{\lambda}{a}\right)>0$	$pK_\nu\left[\sqrt{\dfrac{\lambda}{a}}\,(p+\sqrt{p^2-a^2})^{\frac{1}{2}}\right]\times$ $\times K_\nu\left[\sqrt{a\lambda}\,(p+\sqrt{p^2-a^2})^{-\frac{1}{2}}\right]$ $\operatorname{Re}p>-\operatorname{Re}(a\lambda)$
13.83	$\dfrac{I_\mu(at)\,K_\nu(bt)}{\sqrt{t}}$, $\operatorname{Re}(\mu\pm\nu)>-\dfrac{1}{2}$	$\dfrac{\sqrt{c}\,\Gamma\left(\mu-\nu+\frac{1}{2}\right)\cos(\mu\pi)}{\cos(\mu+\nu)\pi}\times$ $\times pP_{\nu-\frac{1}{2}}^{-\mu}(\operatorname{ch}\alpha)\,Q_{\mu-\frac{1}{2}}^{-\nu}(\operatorname{ch}\beta)$ $\operatorname{Re}(p\pm a\pm b)>0$ $\operatorname{sh}\alpha=ac$, $\operatorname{sh}\beta=bc$ $\operatorname{ch}\alpha\operatorname{ch}\beta=pc$ $\lvert\operatorname{Im}\alpha\rvert<\dfrac{\pi}{2}$, $\lvert\operatorname{Im}\beta\rvert<\dfrac{\pi}{2}$
13.84	$\dfrac{K_\mu(at)\,K_\nu(bt)}{\sqrt{t}}$ $\lvert\operatorname{Re}\mu\rvert+\lvert\operatorname{Re}\nu\rvert<\dfrac{1}{2}$	$\dfrac{\sqrt{c}\,\Gamma\left(\frac{1}{2}-\mu-\nu\right)\cos(\mu\pi)\cos(\nu\pi)}{\cos[(\mu+\nu)\pi]\cos[(\mu-\nu)\pi]}\times$ $\times pQ_{\nu+\frac{1}{2}}^{-\mu}(\operatorname{ch}\alpha)\,Q_{\mu-\frac{1}{2}}^{-\nu}(\operatorname{ch}\beta)$ $\operatorname{Re}(p+a+b)>0$, $\operatorname{sh}\alpha=ac$, $\operatorname{sh}\beta=bc$, $\operatorname{ch}\alpha\operatorname{ch}\beta=pc$ $\lvert\operatorname{Im}\alpha\rvert<\dfrac{\pi}{2}$, $\lvert\operatorname{Im}\beta\rvert<\dfrac{\pi}{2}$

№	$f(t)$	$\bar{f}(p) = p\int_0^\infty e^{-pt} f(t)\,dt$
13.85	$\frac{1}{\sqrt{4\pi t}} \exp\left(-\frac{a^2}{8t}\right) K_\nu\left(\frac{a^2}{8t}\right)$	$\sqrt{p}\, K_{2\nu}(a\sqrt{p})$
13.86	$K_0(2\sqrt{at})$	$-\frac{1}{2} e^{\frac{a}{p}} Ei\left(-\frac{a}{p}\right)$
13.87	$K_1\left(2^{\frac{3}{2}}\sqrt{at}\right)$	$2^{-\frac{3}{2}} \sqrt{\frac{a\pi}{p}}\, e^{\frac{a}{p}} \left[K_1\left(\frac{a}{p}\right) - K_0\left(\frac{a}{p}\right)\right]$
13.88	$\frac{K_0\left(2^{\frac{3}{2}}\sqrt{at}\right)}{\sqrt{t}}$	$\frac{\sqrt{\pi p}}{2} e^{\frac{a}{p}} K_0\left(\frac{a}{p}\right)$
13.89	$\frac{K_\nu\left(2^{\frac{3}{2}}\sqrt{at}\right)}{\sqrt{t}}, \quad \lvert \mathrm{Re}\,\nu \rvert < 1$	$\frac{\sqrt{\pi p}}{2} \sec\left(\frac{\nu\pi}{2}\right) e^{\frac{a}{p}} K_{\frac{\nu}{2}}\left(\frac{a}{p}\right)$
13.90	$t^{\frac{1}{2}\nu} K_\nu(2\sqrt{at}), \quad \mathrm{Re}\,\nu > -1$	$\frac{1}{2} a^{\frac{\nu}{2}} \Gamma(\nu+1)\, p^{-\nu} e^{\frac{a}{p}} \Gamma\left(-\nu, \frac{a}{p}\right)$
13.91	$t^{\mu-\frac{1}{2}} K_{2\nu}(2\sqrt{at})$ $\mathrm{Re}\,(\mu \pm \nu) > -\frac{1}{2}$	$\frac{\Gamma\left(\mu+\nu+\frac{1}{2}\right)\Gamma\left(\mu-\nu+\frac{1}{2}\right)}{2\sqrt{a}\,p^{\mu-1}} \times e^{\frac{a}{2p}} W_{-\mu,\nu}\left(\frac{a}{p}\right)$
13.92	$\frac{1}{\sqrt{t}} K_{2\nu}(\sqrt{2at}) \times \left\{\sin\left[\left(\nu-\frac{1}{4}\right)\pi\right] J_{2\nu}(\sqrt{2at}) + \cos\left[\left(\nu-\frac{1}{4}\right)\pi\right] Y_{2\nu}(\sqrt{2at})\right\}$ $\lvert \mathrm{Re}\,\nu \rvert < \frac{1}{4}$	$-\frac{2^{-\frac{3}{2}}}{\sqrt{\pi}\,a} p^{\frac{3}{2}} \Gamma\left(\frac{1}{4}+\nu\right) \times \Gamma\left(\frac{1}{4}-\nu\right) W_{\frac{1}{4},\nu}\left(e^{\frac{i\pi}{2}}\frac{a}{p}\right) \times W_{\frac{1}{4},\nu}\left(e^{-\frac{i\pi}{2}}\frac{a}{p}\right)$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
13.93	$t^{2\nu}K_{2\nu}(\sqrt{t})\,I_{2\nu}(\sqrt{t})$, $\operatorname{Re}\nu>-\frac{1}{4}$	$\frac{1}{2}\Gamma\left(2\nu+\frac{1}{2}\right)p^{-3\nu+\frac{1}{2}}\times$ $\times\exp\left(\frac{1}{2p}\right)W_{-\nu,\nu}\left(\frac{1}{p}\right)$
13.94	$\dfrac{K_0(a\sqrt{t})+\frac{\pi}{2}Y_0(a\sqrt{t})}{\sqrt{t}}$	$\sqrt{\pi p}\,\operatorname{sh}\frac{a^2}{8p}K_0\left(\frac{a^2}{8p}\right)$
13.95	$\dfrac{K_0(a\sqrt{t})-\frac{\pi}{2}Y_0(a\sqrt{t})}{\sqrt{t}}$	$\sqrt{\pi p}\,\operatorname{ch}\frac{a^2}{8p}K_0\left(\frac{a^2}{8p}\right)$
13.96	$\dfrac{e^{-\frac{a}{t}}K_\nu\left(\frac{a}{t}\right)}{\sqrt{t}}$, $\operatorname{Re}a>0$	$2\sqrt{\pi p}\,K_{2\nu}(2^{\frac{3}{2}}\sqrt{ap})$
13.97	$\frac{1}{t}\exp\left(-\frac{a+b}{2t}\right)K_\nu\left(\frac{a-b}{2t}\right)$, $\operatorname{Re}a>\operatorname{Re}b>0$	$2pK_\nu[(\sqrt{a}+\sqrt{b})\sqrt{p}]\times$ $\times K_\nu[(\sqrt{a}-\sqrt{b})\sqrt{p}]$
13.98	$t^{\mu-1}(t+\beta)^{-\mu}K_{2\nu}(\alpha\sqrt{t^2+\beta t})$, $\operatorname{Re}(\mu\pm\nu)>0$, $\lvert\arg\beta\rvert<\pi$	$\frac{\Gamma(\mu+\nu)\,\Gamma(\mu-\nu)}{\alpha\beta}p\exp\left(\frac{1}{2}\beta p\right)\times$ $\times W_{\frac{1}{2}-\mu,\nu}\left[\frac{\alpha^2\beta}{2}\frac{1}{(p+\sqrt{p^2-\alpha^2})}\right]\times$ $\times W_{\frac{1}{2}-\mu,\nu}\left[\frac{\beta}{2}(p+\sqrt{p^2-\alpha^2})\right]$ $\operatorname{Re}p>\lvert\operatorname{Re}\alpha\rvert$
13.99	$K_0(a\sqrt{t^2-b^2})$	$\frac{p}{\sqrt{p^2-a^2}}\times$ $\times\ln\frac{p+\sqrt{p^2-a^2}}{a}\,e^{-b\sqrt{p^2-a^2}}$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
13.100	$tK_0\left(a\sqrt{t^2-b^2}\right)$	$-\frac{p}{p^2-a^2}e^{-b\sqrt{p^2-a^2}}\times\left[1+p\ln\frac{p+\sqrt{p^2-a^2}}{a}\times\left(b-\frac{1}{\sqrt{p^2-a^2}}\right)\right]$
13.101	$\sqrt{t^2-b^2}\,K_1\left(a\sqrt{t^2-b^2}\right)$	$-\frac{p}{p^2-a^2}e^{-b\sqrt{p^2-a^2}}\times\left[\frac{p}{a}+a\ln\frac{p+\sqrt{p^2-a^2}}{a}\times\left(b+\frac{1}{\sqrt{p^2-a^2}}\right)\right]$
13.102	$\left(\frac{t-b}{t+b}\right)^{\frac{\nu}{2}}K_\nu\left(a\sqrt{t^2-b^2}\right)$, $-1<\operatorname{Re}\nu<1$	$\frac{\pi p e^{-b\sqrt{p^2-a^2}}}{2\sin(\nu\pi)\sqrt{p^2-a^2}}\times\left[\left(\frac{p+\sqrt{p^2-a^2}}{a}\right)^\nu-\left(\frac{a}{p+\sqrt{p^2-a^2}}\right)^\nu\right]$
13.103	$-\frac{2}{\pi}K_0\left(2a\operatorname{sh}\left(\frac{t}{2}\right)\right)$, $\operatorname{Re}a>0$	$p\left(J_p(a)\frac{\partial Y_p(a)}{\partial p}-Y_p(a)\frac{\partial J_p(a)}{\partial p}\right)$
13.104	$-\frac{2}{\pi}\operatorname{ch}tK_0\left[2a\operatorname{sh}\left(\frac{t}{2}\right)\right]$, $\operatorname{Re}a>0$	$p\left\{J'_p(a)\frac{\partial Y'_p(a)}{\partial p}-Y'_p(a)\frac{\partial J'_p(a)}{\partial p}+\frac{p^2}{a^2}\left[J_p(a)\frac{\partial Y_p(a)}{\partial p}-Y_p(a)\frac{\partial J_p(a)}{\partial p}\right]\right\}$, $\left(J'_v=\frac{d}{da}J_v\right)$
13.105	$\frac{2}{\pi^2}\sin(2\nu\pi)K_{2\nu}\left[2a\operatorname{sh}\left(\frac{t}{2}\right)\right]$, $\operatorname{Re}a>0$	$p\left\{J_{\nu-p}(a)Y_{-\nu-p}(a)-J_{-\nu-p}(a)Y_{\nu-p}(a)\right\}$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
13.106	$\operatorname{csch}\left(\frac{t}{2}\right)K_{2\nu}\left[a\operatorname{csch}\left(\frac{t}{2}\right)\right]$ $\operatorname{Re}a>0$	$\frac{1}{a}p\Gamma\left(p+\nu+\frac{1}{2}\right)\times$ $\times\Gamma\left(p-\nu+\frac{1}{2}\right)\times$ $\times W_{-p,\nu}(ia)\,W_{-p,\nu}(-ia)$ $\operatorname{Re}(p\pm\nu)>-1$
13.107	$\frac{1}{\operatorname{sh}\left(\frac{t}{2}\right)}\exp\left(-\frac{ae^t+b}{e^t-1}\right)\times$ $\times K_{2\nu}\left[\frac{\sqrt{ab}}{\operatorname{sh}\left(\frac{t}{2}\right)}\right]$ $\operatorname{Re}a>0,\quad\operatorname{Re}b>0$	$\frac{p}{\sqrt{ab}}\Gamma\left(p+\nu+\frac{1}{2}\right)\times$ $\times\Gamma\left(p-\nu+\frac{1}{2}\right)\times$ $\times\exp\left(-\frac{1}{2}\alpha+\frac{1}{2}\beta\right)\times$ $\times W_{-p,\nu}(a)\,W_{-p,\nu}(b)$ $\operatorname{Re}(p\pm\nu)>-\frac{1}{2}$
13.108	$\int_t^\infty K_0(a\tau)\,d\tau$	$\frac{\pi}{2a}-\frac{1}{\sqrt{p^2-a^2}}\ln\frac{p+\sqrt{p^2-a^2}}{a}$

§ 14. Функции Бесселя высших порядков

14.1	$t^{-\frac{m+n}{3}}J^{(2)}_{m,n}\left(3\sqrt[3]{t}\right)$	$(-1)^n p^{\frac{m+n}{2}}J_{n-m}\left(\frac{2}{\sqrt{p}}\right)$
14.2	$t^{\frac{2m-n}{3}}J^{(2)}_{m,n}\left(3\sqrt[3]{t}\right)$	$p^{\frac{n}{2}-m}J_n\left(\frac{2}{\sqrt{p}}\right)$
14.3	$t^{\frac{2n-m}{3}}J^{(2)}_{m,n}\left(3\sqrt[3]{t}\right)$	$p^{\frac{m}{2}-n}J_m\left(\frac{2}{\sqrt{p}}\right)$
14.4	$-\frac{m+n}{3}t^{-1-\frac{m+n}{3}}J^{(2)}_{m,n}\left(3\sqrt[3]{t}\right)+$ $+t^{-\frac{m+n+2}{3}}J^{(2)\prime}_{m,n}\left(3\sqrt[3]{t}\right)$	$(-1)^n p^{\frac{m+n+2}{2}}J_{n-m}\left(\frac{2}{\sqrt{p}}\right)$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt} f(t)\,dt$
14.5	$(t-a)^{\frac{2m-n}{3}} J^{(2)}_{m,\,n}\left[3\sqrt[3]{t-a}\right]$ $(t>a)$	$e^{-ap} p^{\frac{n}{2}-m} J_n\left(\frac{2}{\sqrt{p}}\right)$
14.6	$t^{\frac{1}{6}} J^{(2)}_{0,\,-\frac{1}{2}}\left(3\sqrt[3]{t}\right)$	$p^{-\frac{1}{4}} J_{-\frac{1}{2}}\left(\frac{\ }{\sqrt{p}}\right)$
14.7	$\frac{2\sqrt{\pi t}}{3} J^{(2)}_{\frac{1}{6},\,-\frac{1}{6}}(t)$	$\frac{p}{\sqrt{p^3+1}}$
14.8	$\frac{2\sqrt{\pi t}}{3} J^{(2)}_{-\frac{1}{6},\,-\frac{5}{6}}(t)$	$\frac{p^2}{\sqrt{p^3+1}}$
14.9	$\frac{2\sqrt{\pi t}}{3} J^{(2)}_{-\frac{5}{6},\,-\frac{7}{6}}(t)$	$\frac{p^3}{\sqrt{p^3+1}}$
14.10	$\Gamma\left(\frac{2}{3}\right)\left(\frac{t}{3}\right)^{\frac{1}{3}} J^{(2)}_{0,\,-\frac{1}{3}}(t)$	$\sqrt[3]{\frac{p}{p^3+1}}$
14.11	$\frac{1}{3}\sqrt{\frac{\pi}{t}}\, J^{(2)}_{\frac{1}{6},\,-\frac{1}{6}}\left(-\frac{t}{\sqrt[3]{4}}\right)$	$p\int_p^\infty \frac{du}{\sqrt{4u^3-1}}$
14.12	$\frac{1}{3\sqrt[3]{4}}\sqrt{\frac{\pi}{t}}\, J^{(2)}_{-\frac{1}{6},\,-\frac{5}{6}}\left(-\frac{t}{\sqrt[3]{4}}\right)$	$-p\int_p^\infty \frac{u\,du}{\sqrt{4u^3-1}}$
14.13	$\frac{3^{\mu+\nu}\,\Gamma(\mu+1)\,\Gamma(\nu+1)}{\Gamma(\mu+\nu+\alpha+1)} t^{\alpha} J^{(2)}_{\mu,\,\nu}(t)$ $\mathrm{Re}\,(\mu+\nu+\alpha)>-1$	$p^{-(\mu+\nu+\alpha)}\,{}_3F_2\left(\frac{\mu+\nu+\alpha+1}{3}, \frac{\mu+\nu+\alpha+2}{3}, \frac{\mu+\nu+\alpha+3}{3}; \mu+1, \nu+1; -\frac{1}{p^3}\right)$

№	$f(t)$	$\bar{f}(p) = p\int_0^\infty e^{-pt} f(t)\,dt$
14.14	$J^{(2)}_{2n,\,n}\left(3t^{\frac{2}{3}}\right)$	$\frac{1}{\Gamma(n+1)\,p^{2n+1}}\,{}_1F_1\left(n+\frac{1}{2};\ 2n+1;\ -\frac{4}{p^2}\right) = e^{-\frac{2}{p^2}} I_n\left(\frac{2}{p^2}\right)$

§ 15. Функции Томсона и функции Струве

15.1	$\operatorname{ber} t$	$\frac{p\left(\sqrt{p^4+1}+p^2\right)^{\frac{1}{2}}}{\sqrt{2(p^4+1)}}$, $\operatorname{Re} p > 2^{-\frac{1}{2}}$
15.2	$\operatorname{bei} t$	$\frac{p\left(\sqrt{p^4+1}-p^2\right)^{\frac{1}{2}}}{\sqrt{2(p^4+1)}}$, $\operatorname{Re} p > 2^{-\frac{1}{2}}$
15.3	$\operatorname{ber}_\nu t + i \operatorname{bei}_\nu t \quad \operatorname{Re}\nu > -1$	$i^{\frac{3\nu}{2}} \frac{p}{\left(p+\sqrt{p^2-i}\right)^\nu \sqrt{p^2-i}}$
15.4	$\operatorname{ber}(2\sqrt{t})$	$\cos\left(\frac{1}{p}\right)$
15.5	$\operatorname{bei}(2\sqrt{t})$	$\sin\left(\frac{1}{p}\right)$
15.6	$t^{\frac{1}{2}\nu} \operatorname{ber}_\nu(\sqrt{t})$ $\operatorname{Re}\nu > -1$	$2^{-\nu} p^{-\nu} \cos\left[\frac{1}{4p}(1+3\nu\pi p)\right]$
15.7	$t^{\frac{\nu}{2}} \operatorname{bei}_\nu(\sqrt{t})$ $\operatorname{Re}\nu > -1$	$2^{-\nu} p^{-\nu} \sin\left[\frac{1}{4p}(1+3\nu\pi p)\right]$
15.8	0 при $0 < t < a$ $\operatorname{ber}(\alpha\sqrt{t^2-a^2}) + i\operatorname{bei}(\alpha\sqrt{t^2-a^2})$ при $t > a$	$\frac{p}{\sqrt{p^2-i\alpha^2}}\, e^{-a\sqrt{p^2-i\alpha^2}}$ $\operatorname{Re}\left(p \pm \alpha i^{\frac{1}{2}}\right) > 0$
15.9	0 при $0 < t < a$ $t\,[\operatorname{ber}(\alpha\sqrt{t^2-a^2}) +$ $+ i\operatorname{bei}(\alpha\sqrt{t^2-a^2})]$ при $t > a$	$\frac{p^2}{(p^2-i\alpha^2)^3}\left(a\sqrt{p^2-i\alpha^2}+1\right)\times$ $\times\, e^{-a\sqrt{p^2-i\alpha^2}}$, $\operatorname{Re}\left(p \pm \alpha i^{\frac{1}{2}}\right) > 0$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
15.10	0 при $0<t<a$ $\sqrt{t^2-a^2}\,[\operatorname{ber}_1(\alpha\sqrt{t^2-a^2})+$ $+i\operatorname{bei}(\alpha\sqrt{t^2-a^2})]$ при $t>a$	$\frac{\alpha p}{(p^2-i\alpha^2)^3}(a\sqrt{p^2-i\alpha^2}+1)\times$ $\times e^{-a\sqrt{p^2-i\alpha^2}+\frac{3}{4}\pi i}$ $\operatorname{Re}\left(p\pm\alpha i^{\frac{1}{2}}\right)>0$
15.11	0 при $0<t<a$ $\frac{\operatorname{ber}_1(\alpha\sqrt{t^2-a^2})}{\sqrt{t^2-a^2}}+$ $+\frac{i\operatorname{bei}_1(\alpha\sqrt{t^2-a^2})}{\sqrt{t^2-a^2}}$ при $t>a$	$\frac{p}{\alpha a}e^{-\frac{3}{4}\pi i}\left(e^{-ap}-e^{-a\sqrt{p^2-i\alpha^2}}\right)$ $\operatorname{Re}\left(p\pm\alpha i^{\frac{1}{2}}\right)>0$
15.12	0 при $0<t<a$ $\frac{t\,[\operatorname{ber}_1(\alpha\sqrt{t^2-a^2})}{\sqrt{t^2-a^2}}+$ $+\frac{i\operatorname{bei}_1(\alpha\sqrt{t^2-a^2})]}{\sqrt{t^2-a^2}}$ при $t>a$	$\frac{p}{\alpha}e^{-\frac{3}{4}\pi i}\left(e^{-ap}-\frac{pe^{-a\sqrt{p^2-i\alpha^2}}}{\sqrt{p^2-i\alpha^2}}\right)$ $\operatorname{Re}\left(p\pm\alpha i^{\frac{1}{2}}\right)>0$
15.13	0 при $0<t<a$ $\left(\frac{t-a}{t+a}\right)^{\frac{\nu}{2}}[\operatorname{ber}_\nu(\alpha\sqrt{t^2-a^2})+$ $+i\operatorname{bei}_\nu(\alpha\sqrt{t^2-a^2})]$ при $t>a$ $\operatorname{Re}\nu>-1$	$\alpha^\nu\frac{p}{\sqrt{p^2-i\alpha^2}}(p+\sqrt{p^2-i\alpha^2})^{-\nu}\times$ $\times e^{\frac{3}{4}\nu\pi i-a\sqrt{p^2-i\alpha^2}}$ $\operatorname{Re}\left(p\pm\alpha i^{\frac{1}{2}}\right)>0$
15.14	$\frac{\operatorname{ber}_\nu t+i\operatorname{bei}_\nu t}{t}$, $\operatorname{Re}\nu>0$	$i^{\frac{3\nu}{2}}\frac{p}{\nu(p+\sqrt{p^2-i})^\nu}$
15.15	$\sqrt{t}\,[\operatorname{ber}_\nu(2\sqrt{t})\operatorname{bei}'_\nu(2\sqrt{t})-$ $-\operatorname{bei}_\nu(2\sqrt{t})\operatorname{ber}'_\nu(2\sqrt{t})]$ $\operatorname{Re}\nu>-2$	$\frac{1}{p}I_\nu\left(\frac{2}{p}\right)$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
15.16	$\operatorname{ber}_\nu^2(2\sqrt{t})+\operatorname{bei}_\nu^2(2\sqrt{t})$ $\operatorname{Re}\nu>-1$	$I_\nu\left(\frac{2}{p}\right)$
15.17	$\frac{2}{\sqrt{t}}\left[\operatorname{ber}_\nu(2\sqrt{t})\operatorname{ber}'_\nu(2\sqrt{t})+\right.$ $\left.+\operatorname{bei}_\nu(2\sqrt{t})\operatorname{bei}'_\nu(2\sqrt{t})\right]$ $\operatorname{Re}\nu>0$	$pI_\nu\left(\frac{2}{p}\right)$
15.18	$\left[\operatorname{ber}'_\nu(2\sqrt{t})\right]^2+\left[\operatorname{bei}'_\nu(2\sqrt{t})\right]^2$ $\operatorname{Re}\nu>0$	$p^2I_\nu\left(\frac{2}{p}\right)$
15.19	$[\operatorname{ber}_n(-2\sqrt{t})]^2+[\operatorname{bei}_n(-2\sqrt{t})]^2$	$(-1)^{\frac{n}{2}}J_n\left(\frac{2}{p}\right)$
15.20	$\frac{1}{\sqrt{t}}\int\limits_0^\infty e^{-\frac{x^2}{16t}}\operatorname{ber}(2\sqrt{x})\,dx$	$2\sqrt{\pi}\cos\left(\frac{2}{\sqrt{p}}\right)$
15.21	$\operatorname{ker}t+i\operatorname{kei}t$	$\frac{p}{\sqrt{p^2-i}}\ln\frac{p+\sqrt{p^2-i}}{\sqrt{i}}$
15.22	$\operatorname{ker}_\nu t+i\operatorname{kei}_\nu t$	$\frac{\pi p}{2i^{\frac{3\nu}{2}}\sqrt{p^2-i}\sin\nu\pi}\times$ $\times\left[(p+\sqrt{p^2-i})^\nu-i^\nu(p+\sqrt{p^2-i})^{-\nu}\right]$ $-1<\operatorname{Re}<1$
15.23	$t\,[\operatorname{ker}(at)+i\operatorname{kei}(at)]$	$\frac{p^2}{(p^2-ia^2)^{\frac{3}{2}}}\ln\left[\frac{1}{a\sqrt{i}}\times\right.$ $\left.\times(p+\sqrt{p^2-ia^2})\right]-\frac{p}{p^2-ia^2}$ $\operatorname{Re}(p\pm a\sqrt{i})>0$

№	$f(t)$	$\bar{f}(p) = p\int_0^\infty e^{-pt} f(t)\,dt$
15.24	$t\,[\mathrm{ker}_1(at) + i\,\mathrm{kei}_1(at)]$	$\frac{\sqrt{i}\,p^2}{a(p^2 - ia^2)} + \frac{ai^{\frac{3}{2}}p}{(p^2 - ia^2)^{\frac{3}{2}}} \times$ $\times \ln\left[\frac{1}{a\sqrt{i}}(p + \sqrt{p^2 - i\alpha^2})\right]$ $\mathrm{Re}\,(p \pm a\sqrt{i}) > 0$
15.25	0 при $0 < t < a$ $\mathrm{ker}\,(\alpha\sqrt{t^2 - a^2}) + i\,\mathrm{kei}\,(\alpha\sqrt{t^2 - a^2})$ при $t > a$	$\frac{p}{\sqrt{p^2 - i\alpha^2}} e^{-a\sqrt{p^2 - i\alpha^2}} \times$ $\times \ln\left[\frac{1}{\alpha\sqrt{i}}(p + \sqrt{p^2 - i\alpha^2})\right]$ $\mathrm{Re}\,(p + \alpha\sqrt{i}) > 0$
15.26	0 при $0 < t < a$ $t\,[\mathrm{ker}\,(\alpha\sqrt{t^2 - a^2}) +$ $+ i\,\mathrm{kei}\,(\alpha\sqrt{t^2 - a^2})]$ при $t > a$	$-\frac{p}{p^2 - i\alpha^2} e^{-a\sqrt{p^2 - i\alpha^2}} \times$ $\times \left\{1 + \left(ap - \frac{p}{\sqrt{p^2 - i\alpha^2}}\right) \times\right.$ $\left.\times \ln\left[\frac{1}{\alpha\sqrt{i}}(p + \sqrt{p^2 - i\alpha^2})\right]\right\}$ $\mathrm{Re}\,(p + \alpha\sqrt{i}) > 0$
15.27	0 при $0 < t < a$ $\sqrt{t^2 - a^2}\,[\mathrm{ker}_1(\alpha\sqrt{t^2 - a^2}) +$ $+ i\,\mathrm{kei}_1(\alpha\sqrt{t^2 - a^2})]$ при $t > a$	$\frac{p}{\sqrt{p^2 - i\alpha^2}} e^{-a\sqrt{p^2 - i\alpha^2}} \times$ $\times \left\{\sqrt{i}\,\frac{p}{\alpha} + i^{\frac{3}{2}}\alpha \times\right.$ $\times \left(a + \frac{1}{\sqrt{p^2 - i\alpha^2}}\right) \times$ $\left.\times \ln\left[\frac{1}{\alpha\sqrt{i}}(p + \sqrt{p^2 - i\alpha^2})\right]\right\}$ $\mathrm{Re}\,(p + \alpha\sqrt{i}) > 0$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
15.28	0 при $0<t<a$ $\left(\frac{t-a}{t+a}\right)^{\frac{\nu}{2}}[\operatorname{ker}_\nu(\alpha\sqrt{t^2-a^2})+$ $+i\operatorname{kei}_\nu(\alpha\sqrt{t^2-a^2})]$, при $t>a$ $\lvert\operatorname{Re}\nu\rvert<1$	$\frac{\pi p e^{-ap-\frac{1}{2}i\nu\pi}}{2\sin(\nu\pi)\sqrt{p^2-i\alpha^2}}\times$ $\times\left[\left(\frac{p+\sqrt{p^2-i\alpha^2}}{\alpha\sqrt{i}}\right)^\nu-\right.$ $\left.-\left(\frac{\alpha\sqrt{i}}{p+\sqrt{p^2-i\alpha^2}}\right)^\nu\right]$ $\operatorname{Re}(p+\alpha\sqrt{i})>0$
15.29	$\mathbf{H}_0(at)$	$\frac{2}{\pi}\frac{p}{\sqrt{p^2+a^2}}\ln\left(\frac{\sqrt{p^2+a^2}}{p}+\frac{a}{p}\right)$ $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
15.30	$\mathbf{H}_1(at)$	$\frac{2}{\pi}-\frac{2p^2}{\pi a\sqrt{p^2+a^2}}\times$ $\times\ln\left(\frac{a+\sqrt{p^2+a^2}}{p}\right)$, $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
15.31	$\mathbf{H}_2(at)$	$\frac{2p}{\pi}\left(-\frac{2}{a}+\frac{a}{3p^2}+\right.$ $\left.+\frac{a^2+2p^2}{a^2\sqrt{p^2+a^2}}\ln\frac{a+\sqrt{p^2+a^2}}{p}\right)$ $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
15.32	$\mathbf{H}_3(at)$	$\frac{2}{\pi}\left(\frac{1}{3}+\frac{4p^2}{a^2}+\frac{2}{15}\frac{a^2}{p^2}\right)-$ $-\frac{1}{\pi a^3}\frac{p}{\sqrt{p^2+a^2}}(6a^2p+8p^3)\times$ $\times\ln\frac{a+\sqrt{p^2+a^2}}{p}$, $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$
15.33	$\mathbf{H}_{\frac{1}{2}}(at)$, $\operatorname{Re}a>0$	$\sqrt{\frac{2p}{a}}-\frac{1}{\sqrt{a}}\frac{p}{\sqrt{p^2+a^2}}\times$ $\times(p+\sqrt{p^2+a^2})^{\frac{1}{2}}$, $\operatorname{Re}p>\lvert\operatorname{Im}a\rvert$

№	$f(t)$	$\bar{f}(p) = p \int\limits_0^\infty e^{-pt} f(t)\, dt$
15.34	$\mathbf{H}_{-n-\frac{1}{2}}(at)$	$(-1)^n a^{n+\frac{1}{2}} \frac{p}{\sqrt{p^2+a^2}} \times (p+\sqrt{p^2+a^2})^{-n-\frac{1}{2}}$ $\operatorname{Re} p > \lvert \operatorname{Im} a \rvert$
15.35	$\frac{\mathbf{H}_1(at)}{t}$	$\frac{2p}{\pi}\left(-1+\frac{\sqrt{p^2+a^2}}{a} \times \ln \frac{a+\sqrt{p^2+a^2}}{p}\right)$, $\operatorname{Re} p > \lvert \operatorname{Im} a \rvert$
15.36	$\frac{\mathbf{H}_2(at)}{t}$	$\frac{2p}{\pi}\left(\frac{p}{a}+\frac{a}{3p} - \frac{\sqrt{p^2+a^2}}{a} \ln \frac{a+\sqrt{p^2+a^2}}{p}\right)$ $\operatorname{Re} p > \lvert \operatorname{Im} a \rvert$
15.37	$\frac{\mathbf{H}_3(at)}{t}$	$\frac{2p}{\pi}\left(\frac{a^2}{15p^2}-\frac{4p^2}{3a^2}-\frac{7}{9}+ \frac{(4p^2+a^2)\sqrt{p^2+a^2}}{3a^3} \times \ln\frac{a+\sqrt{p^2+a^2}}{p}\right)$, $\operatorname{Re} p > \lvert \operatorname{Im} a \rvert$
15.38	$\sqrt{t}\,\mathbf{H}_{\frac{1}{2}}(at)$	$a\sqrt{\frac{2a}{\pi}} \frac{1}{p^2+a^2}$, $\operatorname{Re} p > \lvert \operatorname{Im} a \rvert$
15.39	$\sqrt{t}\,\mathbf{H}_{-\frac{1}{2}}(at)$	$\sqrt{\frac{2a}{\pi}} \frac{p}{p^2+a^2}$, $\operatorname{Re} p > \lvert \operatorname{Im} a \rvert$
15.40	$\sqrt{t}\,\mathbf{H}_{\frac{3}{2}}(at)$	$\sqrt{\frac{2a}{\pi}}\, p \left[\frac{1}{2p^2}-\frac{1}{p^2+a^2}+ \frac{1}{a^2} \ln \frac{\sqrt{p^2+a^2}}{p}\right]$ $\operatorname{Re} p > \lvert \operatorname{Im} a \rvert$

№	$f(t)$	$\bar{f}(p) = p\int_0^\infty e^{-pt} f(t)\,dt$
15.41	$\sqrt{t}\,\mathbf{H}_{-\frac{3}{2}}(at)$	$\sqrt{\frac{2}{\pi}}\left[\frac{p^2 a^{-\frac{1}{2}}}{p^2+a^2} - a^{-\frac{3}{2}} p \operatorname{arctg}\left(\frac{a}{p}\right)\right]$, $\operatorname{Re} p > \lvert \operatorname{Im} a \rvert$
15.42	$\dfrac{\mathbf{H}_{\frac{1}{2}}(at)}{\sqrt{t}}$	$\left(\frac{\pi a}{2}\right)^{-\frac{1}{2}} p \ln \frac{\sqrt{p^2+a^2}}{p}$ $\operatorname{Re} p > \lvert \operatorname{Im} a \rvert$
15.43	$\dfrac{\mathbf{H}_{-\frac{1}{2}}(at)}{\sqrt{t}}$	$\left(\frac{\pi a}{2}\right)^{-\frac{1}{2}} p \operatorname{arctg}\left(\frac{a}{p}\right)$ $\operatorname{Re} p > \lvert \operatorname{Im} a \rvert$
15.44	$\dfrac{\mathbf{H}_{\frac{3}{2}}(at)}{\sqrt{t}}$	$\left(\frac{\pi a}{2}\right)^{-\frac{1}{2}}\left[\frac{a}{2} - \frac{p^2}{a} \times \ln \frac{\sqrt{p^2+a^2}}{p}\right]$, $\operatorname{Re} p > \lvert \operatorname{Im} a \rvert$
15.45	$t^{\frac{3}{2}}\,\mathbf{H}_{\frac{3}{2}}(at)$	$\sqrt{\frac{2}{a}}\, a^{\frac{5}{2}} \frac{3p^2+a^2}{p^2(p^2+a^2)^2}$ $\operatorname{Re} p > \lvert \operatorname{Im} a \rvert$
15.46	$\dfrac{\mathbf{H}_\nu(t)}{\sqrt{t}}$, $\operatorname{Re}\nu > -\dfrac{3}{2}$	$\sqrt{\frac{2}{\pi}}\, p \int_0^{\frac{\pi}{2}} \frac{\sin\theta}{\sqrt{p^2+\sin^2\theta}} \times \frac{d\theta}{\left(p+\sqrt{p^2+\sin^2\theta}\right)^{\nu+\frac{1}{2}}}$
15.47	$\dfrac{\pi t}{2}\left[J_1(t)\,\mathbf{H}_0(t) - J_0(t)\,\mathbf{H}_1(t)\right]$	$\dfrac{1}{(p^2+1)^{\frac{3}{2}}}$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt} f(t)\,dt$
15.48	$\frac{\pi t}{2}[J_\nu(t)\,\mathbf{H}'_\nu(t)-J'_\nu(t)\,\mathbf{H}_\nu(t)]$, $\operatorname{Re}\nu>-\frac{1}{2}$	$\frac{1}{(p^2+1)^{2\nu+1}}$
15.49	$\sqrt{\frac{2t}{\pi}}\int_0^{\frac{\pi}{2}} \mathbf{H}_\nu(t\sin\theta)\sin^{1-\nu}\theta\,d\theta$	$(2p)^{\frac{1}{2}-\nu}\frac{p\left(p+\sqrt{p^2+1}\right)^{\frac{1}{2}-\nu}}{\sqrt{p^2+1}}$
15.50	$\mathbf{L}_0(at)$	$\frac{2}{\pi}\frac{p}{\sqrt{p^2-a^2}}\arcsin\left(\frac{a}{p}\right)$ $\operatorname{Re}p>\lvert\operatorname{Re}a\rvert$
15.51	$\mathbf{L}_1(at)$	$\frac{2}{\pi}\left[-1+\frac{p^2}{a\sqrt{p^2-a^2}}\arcsin\left(\frac{a}{p}\right)\right]$ $\operatorname{Re}p>\lvert\operatorname{Re}a\rvert$
15.52	$\mathbf{L}_2(at)$	$\frac{2}{a\pi}\left[-2p-\frac{a^2}{3p}+\right.$ $\left.+\frac{1}{a}\frac{p(2p^2-a^2)}{\sqrt{p^2-a^2}}\arcsin\left(\frac{a}{p}\right)\right]$ $\operatorname{Re}p>\lvert\operatorname{Re}a\rvert$
15.53	$\mathbf{L}_3(at)$	$\frac{2}{\pi}\left[\frac{1}{3}-\frac{4p^2}{a^2}-\frac{2a^2}{15p^2}+\right.$ $\left.+\frac{4p^4-3ap^2}{a^3\sqrt{p^2-a^2}}\arcsin\left(\frac{a}{p}\right)\right]$ $\operatorname{Re}p>\lvert\operatorname{Re}a\rvert$
15.54	$\frac{\mathbf{L}_1(at)}{t}$	$\frac{2p}{\pi}\left[1-\frac{\sqrt{p^2-a^2}}{a}\arcsin\left(\frac{a}{p}\right)\right]$ $\operatorname{Re}p>\lvert\operatorname{Re}a\rvert$
15.55	$\frac{\mathbf{L}_2(at)}{t^2}$	$\frac{2}{\pi}\left[\frac{p^2}{a}-\frac{a}{3}-\frac{p^2}{a^2}\times\right.$ $\left.\times\sqrt{p^2-a^2}\arcsin\left(\frac{a}{p}\right)\right]$ $\operatorname{Re}p>\lvert\operatorname{Re}a\rvert$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt} f(t)\,dt$
15.56	$\dfrac{\mathbf{L}_3(at)}{t}$	$\dfrac{2}{\pi}\left[\dfrac{4p^3}{3a^2}-\dfrac{7p}{9}-\dfrac{a^2}{15p}-\right.$ $-\dfrac{(4p^2-a^2)}{3a^3}p\sqrt{p^2-a^2}\times$ $\left.\times\arcsin\left(\dfrac{a}{p}\right)\right]$, $\operatorname{Re} p>\lvert\operatorname{Re} a\rvert$
15.57	$\mathbf{L}_{\frac{1}{2}}(t)$	$\dfrac{p\left(p+\sqrt{p^2-1}\right)^{\frac{1}{2}}}{\sqrt{p^2-1}}-\sqrt{2p}$
15.58	$\mathbf{L}_{-\frac{1}{2}}(t)$	$\dfrac{p}{\sqrt{p^2-1}}\left(p+\sqrt{p^2-1}\right)^{-\frac{1}{2}}$
15.59	$\mathbf{L}_{-n-\frac{1}{2}}(at)$	$a^{n+\frac{1}{2}}\dfrac{p}{\sqrt{p^2-a^2}}\times$ $\times\left(p+\sqrt{p^2-a^2}\right)^{-n-\frac{1}{2}}$ $\operatorname{Re} p>\lvert\operatorname{Re} a\rvert$
15.60	$\sqrt{t}\,\mathbf{L}_{\frac{1}{2}}(at)$	$a\sqrt{\dfrac{2a}{\pi}}\dfrac{1}{p^2-a^2}$, $\operatorname{Re} p>\lvert\operatorname{Re} a\rvert$
15.61	$\sqrt{t}\,\mathbf{L}_{-\frac{1}{2}}(at)$	$\sqrt{\dfrac{2a}{\pi}}\dfrac{p}{p^2-a^2}$, $\operatorname{Re} p>\lvert\operatorname{Re} a\rvert$
15.62	$\sqrt{t}\,\mathbf{L}_{\frac{3}{2}}(at)$	$\sqrt{\dfrac{2a}{\pi}}\left[\dfrac{p}{p^2-a^2}-\dfrac{1}{2p}-\right.$ $\left.-\dfrac{p}{a^2}\ln\left(\dfrac{\sqrt{p^2-a^2}}{p}\right)\right]$ $\operatorname{Re} p>\lvert\operatorname{Re} a\rvert$
15.63	$\sqrt{t}\,\mathbf{L}_{-\frac{3}{2}}(at)$	$\left(\dfrac{\pi a}{2}\right)^{-\frac{1}{2}}\left[\dfrac{p^2}{p^2-a^2}-\dfrac{p}{a}\times\right.$ $\left.\times\operatorname{Arcth}\left(\dfrac{p}{a}\right)\right]$, $\operatorname{Re} p>\lvert\operatorname{Re} a\rvert$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
15.64	$\dfrac{\mathbf{L}_{\frac{1}{2}}(at)}{\sqrt{t}}$	$-\left(\dfrac{\pi a}{2}\right)^{-\frac{1}{2}} p\ln\dfrac{\sqrt{p^2-a^2}}{p}$ $\operatorname{Re}p>\mid\operatorname{Re}a\mid$
15.65	$\dfrac{\mathbf{L}_{-\frac{1}{2}}(at)}{\sqrt{t}}$	$\left(\dfrac{\pi a}{2}\right)^{-\frac{1}{2}} p\operatorname{Arcth}\left(\dfrac{p}{a}\right)$ $\operatorname{Re}p>\mid\operatorname{Re}a\mid$
15.66	$\dfrac{\mathbf{L}_{\frac{3}{2}}(at)}{\sqrt{t}}$	$\left(\dfrac{a\pi}{2}\right)^{-\frac{1}{2}}\left[\dfrac{p^2}{a}\ln\left(\dfrac{\sqrt{p^2-a^2}}{p}\right)-\right.$ $\left.-\dfrac{a}{2}\right],\quad \operatorname{Re}p>\mid\operatorname{Re}a\mid$
15.67	$t^{\frac{3}{2}}\mathbf{L}_{\frac{3}{2}}(at)$	$2^{\frac{1}{2}}\pi^{-\frac{1}{2}}a^{\frac{5}{2}}(3p^2-a^2)\dfrac{1}{p^2(p^2-a^2)^2}$ $\operatorname{Re}p>\mid\operatorname{Re}a\mid$
15.68	$\dfrac{\mathbf{L}_\nu(t)}{\sqrt{t}},\quad \operatorname{Re}\nu>-\dfrac{3}{2}$	$\sqrt{\dfrac{2}{\pi}}\,p\int_0^{\frac{\pi}{2}}\dfrac{\sin\theta}{\sqrt{p^2-\sin^2\theta}}\times$ $\times\dfrac{d\theta}{(p+\sqrt{p^2-\sin^2\theta})^{\frac{1}{2}}}$
15.69	$t^\nu\mathbf{L}_\nu(at),\quad \operatorname{Re}\nu>-\dfrac{1}{2}$	$\dfrac{(2a)^\nu\,\Gamma\left(\nu+\frac{1}{2}\right)p}{\sqrt{\pi}\,(p^2-a^2)^{\nu+\frac{1}{2}}}-$ $-\dfrac{\Gamma(2\nu+1)\,a^\nu}{\sqrt{\dfrac{\pi}{2}}\,p^{\nu-\frac{1}{2}}(a^2-p^2)^{-\frac{\nu}{2}-\frac{1}{4}}}\times$ $\times P_{-\nu-\frac{1}{2}}^{-\nu-\frac{1}{2}}\left(\dfrac{a}{p}\right)$ $\operatorname{Re}p>\mid\operatorname{Re}a\mid$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
15.70	$t^{\frac{\nu}{2}}\mathbf{L}_\nu(\sqrt{t}), \quad \operatorname{Re}\nu>-\frac{3}{2}$	$2^{-\nu}p^{-\nu}\exp\left(\frac{1}{4p}\right)\operatorname{erf}\left(\frac{1}{2\sqrt{p}}\right)$ $\operatorname{Re}p>0$
15.71	$t^{\frac{\nu}{2}}\mathbf{L}_{-\nu}(\sqrt{t})$	$\frac{2^{-\nu}p^{-\nu}}{\Gamma\left(\frac{1}{2}-\nu\right)}\exp\left(\frac{1}{4p}\right)\times$ $\times\gamma\left(\frac{1}{2}-\nu,\ \frac{1}{4p}\right), \quad \operatorname{Re}p>0$
15.72	$\frac{\pi t}{2}[I_0(at)\mathbf{L}_1(at)-I_1(at)\mathbf{L}_0(at)]$	$-\frac{a^2}{(p^2-a^2)^{\frac{3}{2}}}$
15.73	$\frac{\pi t}{2}\left[I_\nu(t)\mathbf{L}'_\nu(t)-I'_\nu(t)\mathbf{L}_\nu(t)\right]$, $\operatorname{Re}\nu>-\frac{1}{2}$	$\frac{1}{(p^2-1)^{\nu+\frac{1}{2}}}$
15.74	$\sqrt{\frac{2t}{\pi}}\int_0^{\frac{\pi}{2}}\mathbf{L}_\nu(t\sin\theta)\sin^{1-\nu}\theta\,d\theta$	$\frac{p\left(p+\sqrt{p^2-1}\right)^{\frac{1}{2}-\nu}}{\sqrt{p^2-1}}-(2p)^{\frac{1}{2}-\nu}$

§ 16. Функции Лежандра

16.1	$t(t+1)^{-\frac{\mu}{2}}P_\nu^\mu(1+2t) \quad \operatorname{Re}\mu<1$	$\sqrt{\pi}\,p^{\mu+\frac{1}{2}}e^{\frac{p}{2}}K_{\nu+\frac{1}{2}}\left(\frac{p}{2}\right)$
16.2	$\left(1+\frac{1}{t}\right)^{\frac{\mu}{2}}P_\nu^\mu(1+2t), \quad \operatorname{Re}\mu<1$	$e^{\frac{p}{2}}W_{\mu,\,\nu+\frac{1}{2}}(p)$
16.3	$t^{\lambda+\frac{\mu}{2}-1}(t+2)^{\frac{\mu}{2}}P_\nu^{-\mu}(1+t)$ $\operatorname{Re}(\lambda+\mu)>0$	$-\frac{\sin(\nu\pi)}{\pi}p^{1-\lambda-\mu}\times$ $\times E(-\nu,\ \nu+1,\ \lambda+\mu:\mu+1:2p)$

№	$f(t)$	$\bar{f}(p) = p\int_0^\infty e^{-pt} f(t)\,dt$
16.4	$t^{\lambda-\frac{\mu}{2}-1}(t+2)^{-\frac{\mu}{2}} P_\nu^{-\mu}(1+t)$ $\operatorname{Re}\lambda > 0$	$\dfrac{E(\mu+\nu+1,\ \mu-\nu,\ \lambda:\mu+1:2p)}{2^\mu p^{\lambda-1}\Gamma(\mu+\nu+1)\Gamma(\mu-\nu)}$
16.5	$(\alpha+t)^{\frac{\nu}{2}}(\beta+t)^{\frac{\nu}{2}}\times$ $\times P_\nu\left[\dfrac{2(\alpha+t)(\beta+t)}{\alpha\beta}-1\right]$ $\lvert\arg\alpha\rvert<\pi,\quad \lvert\arg\beta\rvert<\pi$	$\dfrac{(\alpha\beta)^{\frac{\nu}{2}+\frac{1}{2}}}{\pi}\,p\exp\left[\dfrac{1}{2}(\alpha+\beta)p\right]\times$ $\times K_{\nu+\frac{1}{2}}\left(\dfrac{\alpha p}{2}\right)K_{\nu+\frac{1}{2}}\left(\dfrac{\beta p}{2}\right)$ $\lvert\arg(\alpha p)\rvert<\pi,\quad \lvert\arg(\beta p)\rvert<\pi$
16.6	$\dfrac{P_\nu[2(1+t)^{-2}-1]}{1+t}$	$e^p W_{\nu+\frac{1}{2},0}(p)\,W_{-\nu-\frac{1}{2},0}(p)$
16.7	$t^{-\frac{\mu}{2}}P_\nu^\mu(\sqrt{t+1}),\quad \operatorname{Re}\mu<1$	$2^\mu p^{\frac{\mu}{2}-\frac{1}{4}}e^{\frac{p}{2}}W_{\frac{\mu}{2}+\frac{1}{4},\ \frac{\nu}{2}+\frac{1}{4}}(p)$
16.8	$\dfrac{t^{-\frac{\mu}{2}}}{\sqrt{t+1}}P_\nu^\mu(\sqrt{t+1}),\quad \operatorname{Re}\mu<1$	$2^\mu p^{\frac{\mu}{2}+\frac{1}{4}}p^{\frac{p}{2}}W_{\frac{\mu}{2}-\frac{1}{4},\ \frac{\nu}{2}+\frac{1}{4}}(p)$
16.9	$\sqrt{t}\,P_\nu^{\frac{1}{4}}(\sqrt{t^2+1})\,P_\nu^{-\frac{1}{4}}(\sqrt{t^2+1})$	$\sqrt{\dfrac{\pi p}{8}}\,H^{(1)}_{\nu+\frac{1}{2}}\left(\dfrac{p}{2}\right)H^{(2)}_{\nu+\frac{1}{2}}\left(\dfrac{p}{2}\right)$
16.10	$(\alpha+t)^{-\frac{\nu}{2}-\frac{1}{2}}(\beta+t)^{\frac{\nu}{2}}\times$ $\times\left[-1-(\alpha+\beta)\dfrac{1}{t}\right]^{\frac{\mu}{2}}\times$ $\times P_\nu^\mu\left(\sqrt{\dfrac{\alpha\beta}{(\alpha+t)(\beta+t)}}\right)$ $\operatorname{Re}\mu<1,\quad \lvert\arg\alpha\rvert<\pi,$ $\lvert\arg\beta\rvert<\pi$	$\sqrt{2p}\exp\left[\dfrac{1}{2}(\alpha+\beta)p\right]\times$ $\times D_{\mu-\nu-1}(\sqrt{2\alpha p})\,D_{\mu+\nu}(\sqrt{2\beta p})$ $\lvert\arg(\alpha p)\rvert<\pi,\quad \lvert\arg(\beta p)\rvert<\pi$ $\operatorname{Re}p>0$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
16.11	$(1-e^{-2t})^{\frac{\mu}{2}}P_\nu^{-\mu}(e^t),\quad \operatorname{Re}\mu>-1$	$\dfrac{2^{p-1}p\Gamma\left(\frac{p}{2}+\frac{\nu}{2}+\frac{1}{2}\right)\Gamma\left(\frac{p}{2}-\frac{\nu}{2}\right)}{\sqrt{\pi}\,\Gamma(p+\mu+1)}$ $\operatorname{Re}p>\operatorname{Re}\nu,\ \operatorname{Re}p>-1-\operatorname{Re}\nu$
16.12	$\left[(e^t-1)\left(\dfrac{ae^t}{a-2}-1\right)\right]^{\frac{\mu}{2}}\times$ $\times P_\nu^{-\mu}(ae^t-a+1),\quad \operatorname{Re}a>0,$ $\operatorname{Re}\mu>-1$	$\dfrac{p\Gamma(p-\mu+\nu+1)\,\Gamma(p-\nu-\mu)}{\Gamma(p+1)}\times$ $\times p\left(\dfrac{a}{a-2}\right)^{\frac{p}{2}}P_\nu^{\mu-p}(a-1)$ $\operatorname{Re}p>\operatorname{Re}(\mu-\nu)-1$ $\operatorname{Re}p>\operatorname{Re}(\mu+\nu)$
16.13	$(1-z^2+z^2e^{-t})^\mu\times$ $\times\left\{P_{2\nu}^{2\mu}\left[z\sqrt{1-e^{-t}}\right]-\right.$ $\left.-P_{2\nu}^{2\mu}\left[-z\sqrt{1-e^{-t}}\right]\right\},\quad \lvert z\rvert<1$	$\dfrac{-2^{2\mu+1}\pi zp}{\Gamma(-\mu-\nu)\,\Gamma\left(\frac{1}{2}-\mu+\nu\right)}\times$ $\times\dfrac{\Gamma(p)}{\Gamma\left(p+\frac{3}{2}\right)}\times$ $\times{}_2F_1\left(\frac{1}{2}-\mu-\nu,\nu-\mu+1;p+\frac{3}{2};z^2\right)$
16.14	$(1-e^{-t})^{-\frac{1}{2}}(1-z^2+z^2e^{-t})^\mu\times$ $\times\left\{P_{2\nu}^{2\mu}\left[z\sqrt{1-e^{-t}}\right]+\right.$ $\left.+P_{2\nu}^{2\mu}\left[-z\sqrt{1-e^{-t}}\right]\right\},\quad \lvert z\rvert<1$	$\dfrac{2^{2\mu+1}\pi p}{\Gamma\left(\frac{1}{2}-\mu-\nu\right)\Gamma(1-\mu+\nu)}\times$ $\times\dfrac{\Gamma(p)}{\Gamma\left(p+\frac{1}{2}\right)}\times$ $\times{}_2F_1\left(-\mu-\nu,\ \frac{1}{2}-\mu+\nu;\right.$ $\left.p+\frac{1}{2};\ z^2\right)$
16.15	$\operatorname{sh}^{2\mu}\left(\dfrac{t}{2}\right)P_{2n}\left[\operatorname{ch}\left(\dfrac{t}{2}\right)\right]$ $\operatorname{Re}\mu>-\dfrac{1}{4}$	$\dfrac{\Gamma\left(2\mu+\frac{1}{2}\right)p\Gamma(p-n-\mu)}{4^\mu\sqrt{\pi}\,\Gamma(p+n+\mu+1)}\times$ $\times\dfrac{\Gamma\left(p+n-\mu+\frac{1}{2}\right)}{\Gamma\left(p-n+\mu+\frac{1}{2}\right)}$ $\operatorname{Re}p>n+\operatorname{Re}\mu$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
16.16	$t^{\lambda+\frac{\mu}{2}-1}(t+2)^{\frac{\mu}{2}}Q_\nu^\mu(1+t)$ $\operatorname{Re}\lambda>0,\quad \operatorname{Re}(\lambda+\mu)>0$	$\frac{\Gamma(\nu+\mu+1)}{\Gamma(\nu-\mu+1)}\left\{\frac{\sin(\nu\pi)}{2p^{\lambda+\mu-1}\sin(\mu\pi)}\times\right.$ $\times E(-\nu,\nu+1,\lambda+\mu:\mu+1:2p)-$ $-\frac{\sin[(\mu+\nu)\pi]}{2^{1-\mu}p^{\lambda-1}\sin(\mu\pi)}\times$ $\times E(\nu-\mu+1,-\nu-\mu,$ $\left.\lambda:1-\mu:2p)\right\}$
16.17	$t^{\lambda-\frac{1}{2}\mu-1}(t+2)^{\frac{\mu}{2}}Q_\nu^\mu(t+1)$ $\operatorname{Re}\lambda>0,\quad \operatorname{Re}(\lambda-\mu)>0$	$-\frac{\sin(\nu\pi)}{2\sin(\mu\pi)\,p^{\lambda-\mu-1}}\times$ $\times E(-\nu,\nu+1,\lambda-\mu:1-\mu:2p)-$ $-\frac{\sin[(\mu-\nu)\pi]}{2^{1+\mu}\sin(\mu\pi)\,p^{\lambda-1}}\times$ $\times E(\mu+\nu+1,\mu-\nu,\lambda:1+\mu:2p)$

§ 17. Гипергеометрические функции. Ряды

17.1	$t^{\alpha-1}\,{}_2F_1\left(\frac{1}{2}+\nu,\frac{1}{2}-\nu;\alpha;-\frac{t}{2}\right)$ $\operatorname{Re}\alpha>0$	$\frac{\Gamma(\alpha)}{\sqrt{\pi}}\,p\,(2p)^{\frac{1}{2}-\alpha}K_\nu(p),\quad \operatorname{Re}p>0$
17.2	$t^{\gamma-1}\,{}_2F_1(\alpha,\beta;\delta;-t),\quad \operatorname{Re}\gamma>0$	$\frac{\Gamma(\delta)}{\Gamma(\alpha)\Gamma(\beta)}\,p^{1-\gamma}E(\alpha,\beta,\gamma:\delta:p)$ $\operatorname{Re}p>0$
17.3	$t^{\gamma-1}(1+t)^{\alpha+\beta-\delta}\,{}_2F_1(\alpha,\beta;\delta;-t)$ $\operatorname{Re}\gamma>0$	$\frac{\Gamma(\delta)}{\Gamma(\delta-\alpha)\Gamma(\delta-\beta)}\,p^{1-\gamma}E(\delta-\alpha,$ $\delta-\beta,\gamma:\delta:p),\quad \operatorname{Re}p>0$
17.4	$t^{\gamma-1}\,{}_2F_1(2\alpha,2\beta;\gamma;-\lambda t)$ $\operatorname{Re}\gamma>0,\quad \lvert\arg\lambda\rvert<\pi$	$\Gamma(\gamma)\,p^{1-\gamma}\left(\frac{p}{\lambda}\right)^{\alpha+\beta-\frac{1}{2}}\exp\left(\frac{p}{2\lambda}\right)\times$ $\times W_{\frac{1}{2}-\alpha-\beta,\,\alpha-\beta}\left(\frac{p}{2\lambda}\right),\quad \operatorname{Re}p>0$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
17.5	0 при $0<t<1$ $(t^2-1)^{2\alpha-\frac{1}{2}}\times$ $\times{}_2F_1\left(\alpha-\frac{\nu}{2},\ \alpha+\frac{\nu}{2};\ 2\alpha+\frac{1}{2};\ 1-t^2\right)$ при $t>1$ $\operatorname{Re}\alpha<-\frac{1}{4}$	$\frac{2^{2\alpha}}{\sqrt{\pi}}p^{1-2\alpha}\Gamma\left(2\alpha+\frac{1}{2}\right)K_\nu(p)$, $\operatorname{Re}p>0$
17.6	$[(\alpha+t)(\beta+t)]^{-\frac{1}{2}-\nu}\times$ $\times{}_2F_1\left[\frac{1}{2}+\nu;\ \frac{1}{2}+\nu;\ 1;\ \frac{t(\alpha+\beta+t)}{(\alpha+t)(\beta+t)}\right]$, $\|\arg\alpha\|<\pi$ $\|\arg\beta\|<\pi$	$\frac{p}{\pi(\alpha\beta)^\nu}\exp\left[\frac{1}{2}(\alpha+\beta)p\right]\times$ $\times K_\nu\left(\frac{\alpha p}{2}\right)K_\nu\left(\frac{\beta p}{2}\right)$ $\|\arg\alpha p\|<\pi$, $\|\arg\beta p\|<\pi$, $\operatorname{Re}p>0$
17.7	$\frac{\left(1+\frac{\alpha}{t}\right)^\mu\left(1+\frac{\beta}{t}\right)^\nu}{\sqrt{t}}\times$ $\times{}_2F_1\left[-\mu,\ -\nu;\ \frac{1}{2}-\mu-\nu;\ \frac{t(\alpha+\beta+t)}{(\alpha+t)(\beta+t)}\right]$, $\|\arg\alpha\|<\pi$ $\|\arg\beta\|<\pi$, $\operatorname{Re}(\mu+\nu)<1$	$2^{-\mu-\nu}\Gamma\left(\frac{1}{2}-\mu-\nu\right)\sqrt{p}\times$ $\times\exp\left[\frac{1}{2}(\alpha+\beta)p\right]D_{2\mu}(\sqrt{2\alpha p})\times$ $\times D_{2\nu}(\sqrt{2\beta p})$, $\|\arg\alpha p\|<\pi$ $\|\arg\beta p\|<\pi$, $\operatorname{Re}p>0$
17.8	$\frac{(\alpha+t)^{k-\mu-\frac{1}{2}}(\beta+t)^{\lambda-\mu-\frac{1}{2}}}{t^{k+\lambda}}\times$ $\times{}_2F_1\left[\frac{1}{2}-k+\mu,\ \frac{1}{2}-\lambda+\mu;\ 1-k-\lambda;\ \frac{t(\alpha+\beta+t)}{(\alpha+t)(\beta+t)}\right]$, $\|\arg\alpha\|<\pi$, $\|\arg\beta\|<\pi$ $\operatorname{Re}(k+\lambda)<1$	$\Gamma(1-k-\lambda)(\alpha\beta)^{-\mu-\frac{1}{2}}\times$ $\times\exp\left[\frac{1}{2}(\alpha+\beta)p\right]W_{k,\mu}(\alpha p)\times$ $\times W_{\lambda,\mu}(\beta p)$, $\|\arg\alpha p\|<\pi$ $\|\arg\beta p\|<\pi$, $\operatorname{Re}p>0$
17.9	$(1-e^{-t})^{\lambda-1}{}_2F_1(\alpha,\beta;\gamma;\delta e^{-t})$ $\operatorname{Re}\lambda>0$, $\|\arg(1-\delta)\|<\pi$	$pB(p,\lambda)\,{}_3F_2(\alpha,\beta,p;\gamma,p+\lambda;\delta)$ $\operatorname{Re}p>0$

№	$f(t)$	$\bar{f}(p) = p\int_0^\infty e^{-pt} f(t)\,dt$
17.10	$(1-e^{-t})^{\mu}\,{}_2F_1(-n, \mu+\beta+n; \beta; e^{-t})$ $\operatorname{Re}\mu > -1$	$p\mathrm{B}(p, \mu+n+1)\dfrac{\mathrm{B}(p, \beta+n-p)}{\mathrm{B}(p, \beta-p)}$ $\operatorname{Re} p > 0$
17.11	$(1-e^{-t})^{\gamma-1}\,{}_2F_1(\alpha, \beta; \gamma; 1-e^{-t})$ $\operatorname{Re}\gamma > 0$	$\dfrac{p\Gamma(p)\,\Gamma(\gamma-\alpha-\beta+p)\,\Gamma(\gamma)}{\Gamma(\gamma-\alpha+p)\,\Gamma(\gamma-\beta+p)}$ $\operatorname{Re} p > 0,\ \operatorname{Re} p > \operatorname{Re}(\alpha+\beta-\gamma)$
17.12	$(1-e^{-t})^{\gamma-1}\,{}_2F_1[\alpha, \beta; \gamma; \delta(1-e^{-t})]$ $\operatorname{Re}\gamma > 0,\quad \lvert\arg(1-\delta)\rvert < \pi$	$p\mathrm{B}(p, \gamma)\,{}_2F_1(\alpha, \beta; p+\gamma; \delta)$ $\operatorname{Re} p > 0$
17.13	$(1-e^{-t})^{\lambda-1}\,{}_2F_1[\alpha, \beta; \gamma; \delta(1-e^{-t})]$ $\operatorname{Re}\lambda > 0,\quad \lvert\arg(1-\delta)\rvert < \pi$	$p\mathrm{B}(p, \lambda)\,{}_3F_2(\alpha, \beta, \lambda; \gamma, p+\lambda; \delta)$ $\operatorname{Re} p > 0$
17.14	$t^{\gamma-1}\,{}_1F_1(\alpha, \gamma; \lambda t),\quad \operatorname{Re}\gamma > 0$	$\Gamma(\gamma)\,p^{\alpha-\gamma-1}(p-\lambda)^{-\alpha}$, $\operatorname{Re} p > 0,\ \operatorname{Re}\lambda > 0$
17.15	$\dfrac{t^{\gamma-1}e^{-t}}{(1-\lambda)^{2\alpha}}\,{}_1F_1\left[\alpha; \gamma; -\dfrac{4\lambda t}{(1-\lambda)^2}\right]$ $\operatorname{Re}\gamma > 0$	$\dfrac{\Gamma(\gamma)\,p}{(p+1)^{\gamma}}\left(1-2\dfrac{p-1}{p+1}\lambda+\lambda^2\right)^{-\alpha}$ $\operatorname{Re} p > -1,$ $\operatorname{Re} p > -\operatorname{Re}\left(\dfrac{1+\lambda}{1-\lambda}\right)^2 > 0$
17.16	$t^{\alpha+\nu-\frac{1}{2}}\,{}_1F_2\left(\dfrac{1}{2}+\nu; 1+2\nu, \dfrac{1}{2}+\nu+\alpha; -2t\right)$ $\operatorname{Re}\left(\alpha+\nu+\dfrac{1}{2}\right) > 0$	$2^{\nu}\Gamma(\nu+1)\,\Gamma\left(\alpha+\nu+\dfrac{1}{2}\right)p^{-\alpha+\frac{1}{2}}\times$ $\times e^{-\frac{1}{p}}I_{\nu}\left(\dfrac{1}{p}\right),\ \operatorname{Re} p > 0$
17.17	$t^{\beta-1}\,{}_1F_2(-n; \alpha+1, \beta; \lambda t)$ $\operatorname{Re}\beta > 0$	$\dfrac{n!\,\Gamma(\beta)}{(\alpha+1)_n}\,p^{1-\beta}L_n^{\alpha}\left(\dfrac{\lambda}{p}\right),\ \operatorname{Re} p > 0$
17.18	${}_2F_2(-n, n+1; 1, 1; t)$	$P_n\left(1-\dfrac{2}{p}\right),\quad \operatorname{Re} p > 0$
17.19	$t^{\gamma-1}\,{}_2F_2(-n, n+1; 1, \gamma; t)$ $\operatorname{Re}\gamma > 0$	$\Gamma(\gamma)\,p^{1-\gamma}P_n\left(1-\dfrac{2}{p}\right),\quad \operatorname{Re} p > 0$
17.20	$t^{\gamma-1}\,{}_2F_2\left(-n, n; \gamma, \dfrac{1}{2}; t\right)$ $\operatorname{Re}\gamma > 0$	$\Gamma(\gamma)\,p^{1-\gamma}\cos\left[2n\arcsin\left(\dfrac{1}{\sqrt{p}}\right)\right]$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
17.21	$t^{\gamma-1}\,{}_2F_2\left(-n,\ n+1;\ \gamma,\ \frac{3}{2};\ t\right)$ $\operatorname{Re}\gamma>0$	$\frac{\Gamma(\gamma)}{(2n+1)\,p^{\gamma-1}}\sin\left[(2n+1)\times\right.$ $\left.\times\arcsin\left(\frac{1}{\sqrt{p}}\right)\right]$, $\operatorname{Re}p>0$
17.22	$t^{\gamma-1}\,{}_2F_2\left(-n,\ n+2\nu;\ \nu+\frac{1}{2},\ \gamma;\ t\right)$ $\operatorname{Re}\gamma>0$	$n\mathrm{B}(n,\ 2\nu)\,\Gamma(\gamma)\,p^{1-\gamma}\,C_n^{\nu}\left(1-\frac{2}{p}\right)$ $\operatorname{Re}p>0$
17.23	$t^{\gamma-1}\,{}_2F_2(-n,\ \alpha+n;\ \beta,\ \gamma;\ t)$ $\operatorname{Re}\gamma>0$	$\Gamma(\gamma)\,p^{1-\gamma}\,{}_2F_1\left(-n,\ \alpha+n;\ \beta;\ \frac{1}{p}\right)$ $\operatorname{Re}p>0$
17.24	$t^{\mu+\nu-1}\exp\left(-\frac{t^2}{2}\right)\times$ $\times\,{}_2F_2\left(\mu,\ \nu;\ \frac{\mu+\nu}{2},\ \frac{1+\mu+\nu}{2};\ \frac{t^2}{4}\right)$ $\operatorname{Re}(\mu+\nu)>0$	$\Gamma(\mu+\nu)\,p\exp\left(\frac{p^2}{4}\right)D_{-\mu}(p)\,D_{-\nu}(p)$
17.25	$t^{2\alpha-1}\times$ $\times\,{}_3F_2\left(1,\ \frac{1}{2}-\mu+\nu,\ \frac{1}{2}-\mu-\nu;\right.$ $\left.\alpha,\ \alpha+\frac{1}{2};\ -\lambda^2t^2\right)$, $\operatorname{Re}\lambda>0$ $\operatorname{Re}\alpha>0$	$\Gamma(2\alpha)\,\lambda^{2\mu-1}\,p^{2-2\alpha-2\mu}\,S_{2\mu,\ 2\nu}\left(\frac{p}{\lambda}\right)$ $\operatorname{Re}p>0$
17.26	$t^{2\alpha-1}\,{}_4F_3\left(\frac{1}{2}+\mu+\nu,\ \frac{1}{2}-\mu+\nu,\right.$ $\frac{1}{2}+\mu-\nu,\ \frac{1}{2}-\mu-\nu;\ \frac{1}{2},\ \alpha,\ \alpha+$ $\left.+\frac{1}{2};\ -\frac{\lambda^2t^2}{4}\right)$, $\operatorname{Re}\alpha>0$, $\operatorname{Re}\lambda>0$	$\frac{\pi\Gamma(2\alpha)}{4\lambda p^{2\alpha-2}}\left\{e^{(\mu-\nu)\pi i}H_{2\mu}^{(1)}\left(\frac{p}{\lambda}\right)\times\right.$ $\times H_{2\nu}^{(2)}\left(\frac{p}{\lambda}\right)+e^{(\nu-\mu)\pi i}H_{2\mu}^{(2)}\left(\frac{p}{\lambda}\right)\times$ $\left.\times H_{2\nu}^{(1)}\left(\frac{p}{\lambda}\right)\right\}$, $\lvert\arg p\rvert<\frac{\pi}{2}$
17.27	$t^{2\alpha-1}\,{}_4F_3\left(1+\mu+\nu,\ 1-\mu+\nu,\right.$ $1+\mu-\nu,\ 1-\mu-\nu;\ \frac{3}{2},\ \alpha,\ \alpha+$ $\left.+\frac{1}{2};\ -\frac{\lambda^2t^2}{4}\right)$, $\operatorname{Re}\lambda>0$ $\operatorname{Re}\alpha>0$	$\frac{\pi\Gamma(2\alpha)\,p^{3-2\alpha}}{8i\lambda^2(\mu^2-\nu^2)}\times$ $\times\left\{e^{(\mu-\nu)\pi i}H_{2\mu}^{(1)}\left(\frac{p}{\lambda}\right)H_{2\nu}^{(2)}\left(\frac{p}{\lambda}\right)-\right.$ $\left.-e^{(\nu-\mu)\pi i}H_{2\nu}^{(1)}\left(\frac{p}{\lambda}\right)H_{2\mu}^{(2)}\left(\frac{p}{\lambda}\right)\right\}$ $\operatorname{Re}p>0$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
17.28	$t^{2\alpha-1}\,{}_4F_3\left(\frac{1}{2}+\mu-k,\ \frac{1}{2}-\mu-k,\ \frac{1}{2}-k,\ 1-k;\ 1-2k,\ \alpha,\ \alpha+\frac{1}{2},\ -\lambda^2t^2\right)$, $\operatorname{Re}\lambda>0$, $\operatorname{Re}\alpha>0$	$\Gamma(2\alpha)\,\lambda^{2k}p^{-2\alpha-2k+1}\times$ $\times W_{k,\mu}\left(\frac{ip}{\lambda}\right)W_{k,\mu}\left(-\frac{ip}{\lambda}\right)$, $\operatorname{Re}p>0$
17.29	$t^{\varrho_n-1}\times$ $\times\,{}_mF_n(\alpha_1,\ \ldots,\ \alpha_m;\ \varrho_1,\ \ldots,\ \varrho_n;\ \lambda t)$, $m\leqslant n$, $\operatorname{Re}\varrho_n>0$	$\Gamma(\varrho_n)\,p^{1-\varrho_n}{}_mF_{n-1}\left(\alpha_1,\ \ldots,\ \alpha_m;\ \varrho_1,\ \ldots,\ \varrho_{n-1};\ \frac{\lambda}{p}\right)$ $\operatorname{Re}p>0$ при $m<n$, $\operatorname{Re}p>\operatorname{Re}\lambda$ при $m=n$
17.30	$t^{\sigma-1}\times$ $\times\,{}_mF_n(\alpha_1,\ \ldots,\ \alpha_m;\ \varrho_1,\ \ldots,\ \varrho_n;\ \lambda t)$, $m\leqslant n$, $\operatorname{Re}\sigma>0$	$\Gamma(\sigma)\,p^{1-\sigma}\,{}_{m+1}F_n\left(\alpha_1,\ \ldots,\ \alpha_m,\ \sigma;\ \varrho_1,\ \ldots,\ \varrho_n;\ \frac{\lambda}{p}\right)$ $\operatorname{Re}p>0$ при $m<n$, $\operatorname{Re}p>\operatorname{Re}\lambda$ при $m=n$
17.31	$t^{2\sigma-1}\times$ $\times\,{}_mF_n(\alpha_1,\ \ldots,\ \alpha_m;\ \varrho_1,\ \ldots,\ \varrho_n;\ \lambda^2t^2)$, $m<n$, $\operatorname{Re}\sigma>0$	$\Gamma(2\sigma)\,p^{1-2\sigma}\times$ $\times\,{}_{m+2}F_n\left(\alpha_1,\ \ldots,\ \alpha_m,\ \frac{\sigma}{2},\ \frac{\sigma}{2}+\frac{1}{2};\ \varrho_1,\ \ldots,\ \varrho_n;\ 4\frac{\lambda^2}{p^2}\right)$, $\operatorname{Re}p>0$ при $m<n-1$ $\operatorname{Re}p>\lvert\operatorname{Re}\lambda\rvert$ при $m=n-1$
17.32	$t^{\sigma-1}\times$ $\times\,{}_mF_n[\alpha_1,\ \ldots,\ \alpha_m;\ \varrho_1,\ \ldots,\ \varrho_n;\ (\lambda t)^k]$, $m+k\leqslant n+1$, $\operatorname{Re}\sigma>0$	$\Gamma(\sigma)\,p^{1-\sigma}\times$ $\times\,{}_{m+k}F_n\left[\alpha_1,\ldots,\alpha_m,\ \frac{\sigma}{k},\ \frac{\sigma+1}{k},\ldots,\ \frac{\sigma+k-1}{k};\ \varrho_1,\ldots,\ \varrho_n;\ \left(\frac{k\lambda}{p}\right)^k\right]$ $\operatorname{Re}p>0$ при $m+k\leqslant n$ $\operatorname{Re}\left[p+k\lambda\exp\left(\frac{2\pi ir}{k}\right)\right]>0$ $(r=0,\ 1,\ \ldots,\ k-1)$ при $m+k=n+1$

№	$f(t)$	$f(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
17.33	$\frac{1}{\sqrt{t}}\,{}_{2m}F_{2n}\left(\frac{\alpha_1}{2},\frac{\alpha_1+1}{2},\ldots,\frac{\alpha_m}{2},\frac{\alpha_m+1}{2};\frac{\varrho_1}{2},\frac{\varrho_1+1}{2},\ldots,\frac{\varrho_n}{2},\frac{\varrho_n+1}{2};-2^{m-n-2}\frac{k^2}{t}\right)$, $k>0,\quad m\leqslant n$	$\sqrt{\pi p}\,{}_mF_n(\alpha_1,\ldots,\alpha_m;\varrho_1,\ldots,\varrho_n;-k\sqrt{p})$, $\operatorname{Re}p>0$
17.34	$(1-e^{-t})^{\lambda-1}\times{}_mF_n(\alpha_1,\ldots,\alpha_m;\varrho_1,\ldots,\varrho_n;\gamma e^{-t})$, $\operatorname{Re}\lambda>0,\quad m\leqslant n$; для $m=n+1$ при $\lvert\gamma\rvert<1$	$p\mathrm{B}(\lambda,p)\times{}_{m+1}F_{n+1}(\alpha_1,\ldots,\alpha_m,p;\varrho_1,\ldots,\varrho_n,p+\lambda;\gamma)$, $\operatorname{Re}p>0$
17.35	$(1-e^{-t})\lambda^{-1}\times{}_mF_n[\alpha_1,\ldots,\alpha_m;\varrho_1,\ldots,\varrho_n;\gamma(1-e^{-t})]$, $\operatorname{Re}\lambda>0,\quad m\leqslant n$; для $m=n+1$ при $\lvert\gamma\rvert<1$	$p\mathrm{B}(\lambda,p)\times{}_{m+1}F_{n+1}(\alpha_1,\ldots,\alpha_m,\lambda;\varrho_1,\ldots,\varrho_n,p+\lambda;\gamma)$; $\operatorname{Re}p>0$
17.36	$t^{\alpha_{m+1}-1}E\left(m;\alpha_r:n;\beta_s:\frac{1}{t}\right)$ $\operatorname{Re}\alpha_{m+1}>0$	$p^{-\alpha_{m+1}+1}E(m+1;\alpha_r:n;\beta_s:p)$ $\operatorname{Re}p>0$
17.37	$(e^t-1)^{\alpha_{m+1}}\times E\left(m;\alpha_r:n;\beta_s:\frac{\lambda}{1-e^{-t}}\right)$ $\operatorname{Re}\alpha_{m+1}>-1$	$p\Gamma(p-\alpha_{m+1})E(m+1;\alpha_r:n;\beta_s,p:\lambda)$, $\operatorname{Re}p>\operatorname{Re}\alpha_{m+1}$
17.38	$t^{-2\nu}S_1\left(\nu,\nu-\frac{1}{2},-\nu-\frac{1}{2},\nu-\frac{1}{2};at\right)$	$\frac{2^{-2\nu-\frac{1}{2}}}{\sqrt{\pi}}p^{2\nu}\mathrm{H}_{2\nu}\left(\frac{4a}{p}\right)$, $\operatorname{Re}p>0$
17.39	$t^{-2\nu-1}S_1\left(\nu,\nu-\frac{1}{2},-\nu-\frac{1}{2},\nu+\frac{1}{2};at\right)$	$\frac{2^{-2\nu-\frac{3}{2}}}{\sqrt{\pi}}p^{2\nu+1}\mathrm{H}_{2\nu}\left(\frac{4a}{p}\right)$, $\operatorname{Re}p>0$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
17.40	$t^{-2\lambda-1}S_1\left(\nu-\frac{1}{2},\ -\nu-\frac{1}{2},\ \lambda,\ \lambda+\frac{1}{2};\ at\right)$, $\operatorname{Re}(\nu-\lambda)>0$	$\frac{2^{-2\lambda-1}}{\sqrt{\pi}}p^{2\lambda+1}J_{2\nu}\left(\frac{4a}{p}\right)$, $\operatorname{Re}p>0$
17.41	$t^{-2\nu}S_2\left(\nu,\ \nu-\frac{1}{2},\ -\nu-\frac{1}{2},\ \nu-\frac{1}{2};\ at\right)$	$2^{-2\nu}\sqrt{\pi}\,p^{2\nu}\left[I_{2\nu}\left(\frac{4a}{p}\right)-\mathbf{L}_{2\nu}\left(\frac{4a}{p}\right)\right]$, $\operatorname{Re}p>0$
17.42	$t^{-2\nu-1}S_2\left(\nu,\ -\nu-\frac{1}{2},\ \nu-\frac{1}{2},\ \nu+\frac{1}{2};\ at\right)$, $\operatorname{Re}\nu<0$	$2^{-2\nu-1}\sqrt{\pi}\sec(2\nu\pi)\,p^{2\nu+1}\times\left[I_{-2\nu}\left(\frac{4a}{p}\right)-\mathbf{L}_{2\nu}\left(\frac{4a}{p}\right)\right]$ $\operatorname{Re}p>0$
17.43	$t^{-2\nu}S_2\left(\nu,\ -\nu-\frac{1}{2},\ \nu-\frac{1}{2},\ \nu-\frac{1}{2};\ at\right)$, $\operatorname{Re}\nu<\frac{1}{2}$	$2^{-2\nu}\sqrt{\pi}\sec(2\nu\pi)\,p^{2\nu}\times\left[I_{-2\nu}\left(\frac{4a}{p}\right)-\mathbf{L}_{2\nu}\left(\frac{4a}{p}\right)\right]$ $\operatorname{Re}p>0$
17.44	$t^{-2\lambda-1}S_2\left(\nu-\frac{1}{2},\ -\nu-\frac{1}{2},\ \lambda+\frac{1}{2},\ \lambda;\ at\right)$, $\operatorname{Re}(\lambda\pm\nu)<0$	$\frac{2^{-2\lambda}}{\sqrt{\pi}}p^{2\lambda+1}K_{2\nu}\left(\frac{4a}{p}\right)$, $\operatorname{Re}p>0$
17.45	$t^{-2\nu}S_3\left(\nu,\ \nu-\frac{1}{2},\ -\nu-\frac{1}{2},\ \nu-\frac{1}{2};\ at\right)$, $\operatorname{Re}\nu<\frac{1}{2}$	$2^{-2\nu}\pi^{\frac{3}{2}}\sec(2\nu\pi)\,p^{2\nu}\times\left[\mathbf{H}_{2\nu}\left(\frac{4a}{p}\right)-Y_{2\nu}\left(\frac{4a}{p}\right)\right]$ $\operatorname{Re}p>0$
17.46	$t^{\beta'-1}\Phi_1(\alpha,\beta,\gamma;x,yt)$, $\operatorname{Re}\beta'>0$	$\Gamma(\beta')\,p^{-\beta'+1}F_1\left(\alpha,\beta,\beta',\gamma;\ x,\frac{y}{p}\right)$, $\operatorname{Re}p>0$, $\operatorname{Re}p>\operatorname{Re}y$
17.47	$t^{\beta-1}\Phi_2(\alpha,\alpha',\gamma;xt,y)$, $\operatorname{Re}\beta>0$	$\Gamma(\beta)\,p^{-\beta+1}\Xi_1\left(\alpha,\alpha',\beta,\gamma;\frac{x}{p},y\right)$ $\operatorname{Re}p>0$, $\operatorname{Re}p>\operatorname{Re}x$
17.48	$t^{\gamma-1}\Phi_2(\beta,\beta',\gamma;xt,yt)$, $\operatorname{Re}\gamma>0$	$\Gamma(\gamma)\,p^{-\gamma+1}\left(1-\frac{x}{p}\right)^{-\beta}\left(1-\frac{y}{p}\right)^{-\beta'}$ $\operatorname{Re}p>0$, $\operatorname{Re}x$, $\operatorname{Re}y$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
17.49	$t^{\alpha-1}\Phi_2(\beta,\beta',\gamma;xt,yt)$, $\operatorname{Re}\alpha>0$	$\Gamma(\alpha)p^{-\alpha+1}F_1\left(\alpha,\beta,\beta',\gamma;\frac{x}{p},\frac{y}{p}\right)$ $\operatorname{Re}p>0$, $\operatorname{Re}x$, $\operatorname{Re}y$
17.50	$t^{\gamma-1}\Phi_2(\beta_1,\ldots,\beta_n;\gamma;\lambda_1 t,\ldots,\lambda_n t)$ $\operatorname{Re}\gamma>0$	$\frac{\Gamma(\gamma)}{p^{\gamma-1}}\left(1-\frac{\lambda_1}{p}\right)^{-\beta_1}\ldots\left(1-\frac{\lambda_n}{p}\right)^{-\beta_n}$ $\operatorname{Re}p>0$, $\operatorname{Re}\lambda$; $m=1,\ldots,n$
17.51	$t^{\alpha-1}\Phi_3(\beta,\gamma;xt,y)$, $\operatorname{Re}\alpha>0$	$\Gamma(\alpha)p^{-\alpha+1}\Xi_2\left(\alpha,\beta,\gamma;\frac{x}{p},y\right)$ $\operatorname{Re}p>0$, $\operatorname{Re}x$
17.52	$t^{\beta'-1}\Phi_3(\beta,\gamma;x,yt)$, $\operatorname{Re}\beta'>0$	$\Gamma(\beta')p^{-\beta'+1}\Phi_2\left(\beta,\beta',\gamma;x,\frac{y}{p}\right)$ $\operatorname{Re}p>0$, $\operatorname{Re}y$
17.53	$t^{2\alpha-1}\Phi_3(\beta,\gamma;x,yt^2)$, $\operatorname{Re}\alpha>0$	$\Gamma(2\alpha)p^{-2\alpha+1}\Xi_1\left(\alpha,\beta,\alpha+\frac{1}{2},\gamma;\frac{4y}{p^2},x\right)$, $\operatorname{Re}p>2\lvert\operatorname{Re}\sqrt{y}\rvert$
17.54	$t^{\gamma-1}\Phi_3(\beta,\gamma;xt,yt)$, $\operatorname{Re}\gamma>0$	$\Gamma(\gamma)p^{-\gamma+1}\left(1-\frac{x}{p}\right)^{-\beta}\exp\left(\frac{y}{p}\right)$ $\operatorname{Re}p>0$, $\operatorname{Re}x$
17.55	$t^{\alpha-1}\Phi_3(\beta,\gamma;xt,yt)$, $\operatorname{Re}\alpha>0$	$\Gamma(\alpha)p^{-\alpha+1}\Phi_1\left(\alpha,\beta,\gamma;\frac{x}{p},\frac{y}{p}\right)$ $\operatorname{Re}p>0$, $\operatorname{Re}x$
17.56	$t^{\beta'-1}\Psi_1(\alpha,\beta,\gamma,\gamma';x,yt)$, $\operatorname{Re}\beta'>0$	$\Gamma(\beta')p^{-\beta'+1}F_2\left(\alpha,\beta,\beta',\gamma,\gamma';x,\frac{y}{p}\right)$, $\operatorname{Re}p>0$, $\operatorname{Re}y$
17.57	$t^{\beta-1}\Psi_2(\alpha,\gamma,\gamma';xt,y)$, $\operatorname{Re}\beta>0$	$\Gamma(\beta)p^{-\beta+1}\Psi_1\left(\alpha,\beta,\gamma,\gamma';\frac{x}{p},y\right)$ $\operatorname{Re}p>0$, $\operatorname{Re}x$
17.58	$t^{\alpha-1}\Psi_2(\beta,\gamma,\gamma';xt,yt)$, $\operatorname{Re}\alpha>0$	$\Gamma(\alpha)p^{-\alpha+1}F_4\left(\alpha,\beta,\gamma,\gamma';\frac{x}{p},\frac{y}{p}\right)$ $\operatorname{Re}p>0$, $\operatorname{Re}x$, $\operatorname{Re}y$

№	$f(t)$	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$
17.59	$t^{\beta'-1}\Xi_1(\alpha,\alpha',\beta,\gamma;x,yt)$ $\operatorname{Re}\beta'>0$	$\Gamma(\beta')p^{-\beta'+1}\times$ $\times F_3\left(\alpha,\alpha',\beta,\beta';\gamma;x,\frac{y}{p}\right)$, $\operatorname{Re}p>0,\quad \operatorname{Re}y$
17.60	$t^{\alpha'-1}\Xi_2(\alpha,\beta,\gamma;x,yt),\quad \operatorname{Re}\alpha'>0$	$\Gamma(\alpha')p^{-\alpha'+1}\times$ $\times\Xi_1\left(\alpha,\alpha',\beta,\gamma;x,\frac{y}{p}\right)$ $\operatorname{Re}p>0, \operatorname{Re}y$
17.61	$t^{2\alpha'-1}\Xi_2(\alpha,\beta,\gamma;x,yt^2)$ $\operatorname{Re}\alpha'>0$	$\Gamma(2\alpha')p^{-2\alpha'+1}\times$ $\times F_3\left(\alpha,\alpha',\beta,\alpha'+\frac{1}{2},\gamma;x,\frac{4y}{p^2}\right)$ $\operatorname{Re}p>2\lvert\operatorname{Re}\sqrt{y}\rvert$

§ 18. Тэта-функции

18.1	$\vartheta_0(0,t)$	$\frac{\sqrt{p}}{\operatorname{sh}\sqrt{p}}$
18.2	$\vartheta_0\left(\frac{1}{2},t\right)=\vartheta_3(0,t)=\vartheta_3(1,t)$	$\sqrt{p}\operatorname{cth}\sqrt{p}$
18.3	$\vartheta_0(v,t),\ -\frac{1}{2}\leqslant v\leqslant\frac{1}{2}$	$\frac{\sqrt{p}\operatorname{ch}2v\sqrt{p}}{\operatorname{sh}\sqrt{p}}$
18.4	$\vartheta_0\left(\frac{v}{2a},\frac{t}{a^2}\right),\quad 0<v<a$	$\frac{a\sqrt{p}\operatorname{ch}v\sqrt{p}}{\operatorname{sh}a\sqrt{p}}$
18.5	$\frac{\partial}{\partial v}\vartheta_0\left(\frac{v}{2},t\right),\quad -1<v<1$	$\frac{p\operatorname{sh}v\sqrt{p}}{\operatorname{sh}\sqrt{p}}$
18.6	$\int\limits_0^v\vartheta_0\left(\frac{u}{2},t\right)du,\quad -1<v<1$	$-\frac{\operatorname{sh}v\sqrt{p}}{\operatorname{sh}\sqrt{p}}$
18.7	$\int\limits_0^v\vartheta_0\left(\frac{u}{2a},\frac{t}{a^2}\right)du,\quad 0<v<a$	$-\frac{a\operatorname{sh}v\sqrt{p}}{\operatorname{sh}a\sqrt{p}}$

№	$f(t)$	$\bar{f}(p) = p\int\limits_0^\infty e^{-pt} f(t)dt$
18.8	$\frac{\partial}{\partial v}\hat{\vartheta}_0\left(\frac{v}{2}, t\right), \quad -1 < v < 1$	$-\frac{p \operatorname{ch} v\sqrt{p}}{\operatorname{sh}\sqrt{p}}$
18.9	$\left[\frac{\partial}{\partial v}\hat{\vartheta}_0\left(\frac{v}{2}, t\right)\right]_{v=0}$	$-\frac{p}{\operatorname{sh}\sqrt{p}}$
18.10	$\int\limits_0^v \hat{\vartheta}_0\left(\frac{u}{2}, t\right) du + \int\limits_0^t \left[\frac{\partial}{\partial v}\hat{\vartheta}_0\left(\frac{v}{2}, \tau\right)\right]_{v=0} d\tau$ $-1 < \quad < 1$	$\frac{\operatorname{ch} v\sqrt{p}}{\operatorname{sh}\sqrt{p}}$
18.11	$\vartheta_1(v, t), \quad -\frac{1}{2} \leqslant v \leqslant \frac{1}{2}$	$\frac{\sqrt{p}\operatorname{sh} 2v\sqrt{p}}{\operatorname{ch}\sqrt{p}}$
18.12	$\frac{\partial}{\partial v}\vartheta_1\left(\frac{v}{2}, t\right), \quad -1 < v < 1$	$\frac{p \operatorname{ch} v\sqrt{p}}{\operatorname{ch}\sqrt{p}}$
18.13	$\left[\frac{\partial}{\partial v}\vartheta_1\left(\frac{v}{2}, t\right)\right]_{v=0}$	$\frac{p}{\operatorname{ch}\sqrt{p}}$
18.14	$-\int\limits_0^1 \vartheta_1\left(\frac{u}{2}, t\right) du + 1$	$\frac{1}{\operatorname{ch}\sqrt{p}}$
18.15	$\int\limits_1^v \vartheta_1\left(\frac{u}{2}, t\right) du + 1, \quad -1 \leqslant v \leqslant 1$	$\frac{\operatorname{ch} v\sqrt{p}}{\operatorname{ch}\sqrt{p}}$
18.16	$\hat{\vartheta}_1(v, t), \quad -\frac{1}{2} \leqslant v \leqslant \frac{1}{2}$	$-\frac{\sqrt{p}\operatorname{ch} 2v\sqrt{p}}{\operatorname{ch}\sqrt{p}}$
18.17	$\frac{\partial}{\partial v}\hat{\vartheta}_1\left(\frac{v}{2}, t\right), \quad -1 < v < 1$	$-\frac{p \operatorname{sh} v\sqrt{p}}{\operatorname{ch}\sqrt{p}}$
18.18	$\int\limits_0^v \hat{\vartheta}_1\left(\frac{u}{2}, t\right) du, \quad -1 \leqslant v \leqslant 1$	$-\frac{\operatorname{sh} v\sqrt{p}}{\operatorname{ch}\sqrt{p}}$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
18.19	$\vartheta_2(0,t)$	$\sqrt{p}\,\mathrm{th}\sqrt{p}$
18.20	$\vartheta_2(v,t),\quad 0\leqslant v\leqslant 1$	$-\frac{\sqrt{p}\,\mathrm{sh}\,(2v-1)\sqrt{p}}{\mathrm{ch}\sqrt{p}}$
18.21	$\frac{\partial}{\partial v}\vartheta_2\left(\frac{v}{2a},\frac{t}{a^2}\right),\quad 0<v<2a$	$-\frac{ap\,\mathrm{ch}\,(a-v)\sqrt{p}}{\mathrm{ch}\,a\sqrt{p}}$
18.22	$1-\int_0^v\vartheta_2\left(\frac{u}{2},t\right)du,\quad 0<v<2$	$\frac{\mathrm{ch}\,(v-1)\sqrt{p}}{\mathrm{ch}\sqrt{p}}$
18.23	$\hat{\vartheta}_2\left(\frac{1}{2},t\right)=$ $=-\frac{2}{\sqrt{\pi t}}\sum_{k=1}^\infty(-1)^k e^{-\frac{1}{t}\left(k-\frac{1}{2}\right)^2}$	$\frac{\sqrt{p}}{\mathrm{ch}\sqrt{p}}$
18.24	$\hat{\vartheta}_2(v,t),\quad 0\leqslant v\leqslant 1$	$\frac{\sqrt{p}\,\mathrm{ch}\,(2v-1)\sqrt{p}}{\mathrm{ch}\sqrt{p}}$
18.25	$\frac{\partial}{\partial v}\hat{\vartheta}_2\left(\frac{v}{2},t\right),\quad 0<v<2$	$\frac{p\,\mathrm{sh}\,(v-1)\sqrt{p}}{\mathrm{ch}\sqrt{p}}$
18.26	$\int_0^1\hat{\vartheta}_2\left(\frac{\tau}{2},t\right)d\tau=U(0,t)$	$\mathrm{th}\sqrt{p}$
18.27	$\int_1^v\hat{\vartheta}_2\left(\frac{u}{2},t\right)du,\quad 0\leqslant v\leqslant 2$	$\frac{\mathrm{sh}\,(v-1)\sqrt{p}}{\mathrm{ch}\sqrt{p}}$
18.28	$\vartheta_3(v,t),\quad 0\leqslant v\leqslant 1$	$\frac{\sqrt{p}\,\mathrm{ch}\,(2v-1)\sqrt{p}}{\mathrm{sh}\sqrt{p}}$
18.29	$\frac{1}{2a}\left[\vartheta_3\left(\frac{v-u}{2},\frac{t}{a^2}\right)-\right.$ $\left.-\vartheta_3\left(\frac{v+u}{2},\frac{t}{a^2}\right)\right]$ $0\leqslant v\leqslant u\leqslant a$	$\sqrt{p}\frac{\mathrm{sh}\,(a-u)\sqrt{p}\,\mathrm{sh}\,v\sqrt{p}}{\mathrm{sh}\,a\sqrt{p}}$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
18.30	$\frac{\partial}{\partial v}\vartheta_3\left(\frac{v}{2a},\frac{t}{a^2}\right),\quad 0<v<2a$	$-\frac{ap\,\operatorname{sh}(a-v)\sqrt{p}}{\operatorname{sh}a\sqrt{p}}$
18.31	$\int_1^v \vartheta_3\left(\frac{u}{2},t\right)du,\quad 0\leqslant v\leqslant 2$	$\frac{\operatorname{sh}(v-1)\sqrt{p}}{\operatorname{sh}\sqrt{p}}$
18.32	$\hat{\vartheta}_3(v,t),\quad 0\leqslant v\leqslant 1$	$-\frac{\sqrt{p}\,\operatorname{sh}(2v-1)\sqrt{p}}{\operatorname{sh}\sqrt{p}}$
18.33	$\frac{\partial}{\partial v}\vartheta_3\left(\frac{v}{2},t\right),\quad 0<v<2$	$-\frac{p\,\operatorname{ch}(v-1)\sqrt{p}}{\operatorname{sh}\sqrt{p}}$
18.34	$\int_v^1 \hat{\vartheta}_3\left(\frac{u}{2},t\right)du-$ $-\int_0^t\left[\frac{\partial}{\partial v}\vartheta_0\left(\frac{v}{2},\tau\right)\right]_{v=0}d\tau$ $0<v<2$	$\frac{\operatorname{ch}(v-1)\sqrt{p}}{\operatorname{sh}\sqrt{p}}$

§ 19. Разные функции

19.1	$\nu(t)$	$\frac{1}{\ln p}$
19.2	$\frac{\nu(t)}{1-e^{-t}}$	$p\int_0^\infty \zeta(u+1,\ p)\,du$
19.3	$\frac{\nu(2\sqrt{t})}{\sqrt{t}}$	$2\sqrt{\pi p}\,\nu\left(\frac{1}{p}\right)$
19.4	$\nu(e^{-t})$	$p\int_0^\infty \frac{du}{(p+u)\Gamma(u+1)}$
19.5	$\nu(1-e^{-t})$	$p\,\Gamma(p)\,\nu(1,\ p)$
19.6	$\nu(t,\alpha),\quad \operatorname{Re}\alpha>-1$	$\frac{1}{p^{\alpha}\ln p}$

№	$f(t)$	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$
19.7	$\nu(2\sqrt{t}, 2\alpha)$, $\operatorname{Re}\alpha>-1$	$\frac{1}{2}\sqrt{\frac{\pi}{p}}\,\nu\left(\frac{1}{p}, \alpha-\frac{1}{2}\right)$
19.8	$\frac{\nu(2\sqrt{t}, 2\alpha)}{\sqrt{t}}$, $\operatorname{Re}\alpha>-\frac{1}{2}$	$2\sqrt{\pi p}\,\nu\left(\frac{1}{p}, \alpha\right)$
19.9	$\mu(t, \alpha-1)$, $\operatorname{Re}\alpha>0$	$\Gamma(\alpha)(\ln p)^{-\alpha}$
19.10	$\frac{\mu(2\sqrt{t}, \alpha)}{\sqrt{t}}$	$2^{\alpha+1}\sqrt{\pi p}\,\mu\left(\frac{1}{p}, \alpha\right)$
19.11	$\frac{\lambda\left(\frac{1}{4t}, \alpha\right)}{\sqrt{t}}$	$\frac{\sqrt{\pi p}}{2}\lambda(\sqrt{p}, 2\alpha)$
19.12	$\sqrt{t}\,\lambda\left(\frac{1}{4t}, \alpha\right)$	$\frac{\sqrt{\pi}}{4}[\lambda(\sqrt{p}, 2\alpha+1)-\lambda(\sqrt{p}, 1)]$
19.13	$\frac{\mu(2\sqrt{t}, m, 2n)}{\sqrt{t}}$	$2^m\sqrt{\pi p}\,\mu\left(\frac{1}{p}, m, n\right)$
19.14	$V_n(t)$, где $\frac{1}{1-z}\exp\left(-\frac{1+z}{1-z}t\right)=\sum_{n=0}^{\infty}\left(n+\frac{1}{2}\right)V_n(t)\,P_n(z)$	$\frac{2p}{p-1}Q_n\left(\frac{p+1}{p-1}\right)$
19.15	$U^{m,n}(t)$, где $\frac{e^{-at}I_0(bt)}{(1-x)(1-y)}=\sum_{m,\,n=0}^{\infty}x^m y^n U^{m,n}(t)$, $a+b=\left(\frac{1+x}{1-x}\right)^2$, $a-b=\left(\frac{1+y}{1-y}\right)^2$	$\frac{p}{p+1}P_m\left(\frac{p-1}{p+1}\right)P_n\left(\frac{p-1}{p+1}\right)$ $\operatorname{Re}p>-1$

Глава II

ФОРМУЛЫ ОБРАЩЕНИЯ ПРЕОБРАЗОВАНИЯ ЛАПЛАСА — КАРСОНА

§ 20. Основные функциональные соотношения

№	$\bar{f}(p) = p\int\limits_0^\infty e^{-pt} f(t)\,dt$	$f(t)$
20.1	$\bar{f}(p)$	$\varphi(t)$
20.2	$\bar{f}(ap)$	$\varphi\left(\frac{t}{a}\right)$
20.3	$p\,[\bar{f}(p) - \varphi(0)]$	$\frac{d}{dt}\varphi(t)$
20.4	$p^n\left[\bar{f}(p) - \sum\limits_{k=0}^{n-1}\frac{\varphi^{(k)}(0)}{p^k}\right]$	$\frac{d^n}{dt^n}\varphi(t)$
20.5	$\frac{p}{p-\beta}\bar{f}\left(\frac{p-\beta}{\alpha}\right)$	$e^{\beta t}\varphi(\alpha t)$
20.6	$\frac{\bar{f}(p)}{p}$	$\int\limits_0^t \varphi(\tau)\,d\tau$
20.7	$\frac{\bar{f}(p)}{p^n}$	$\frac{1}{(n-1)!}\int\limits_0^t (t-\xi)^{n-1}\varphi(\xi)\,d\xi$
20.8	$e^{-ap}\bar{f}(p)$	$\begin{cases} 0 & \text{при } t < a \\ \varphi(t-a) & \text{при } t > a \end{cases}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
20.9	$e^{-\frac{b}{a}p}\,\bar{f}\left(\frac{p}{a}\right)$	0 при $t<\frac{b}{a}$ $\varphi(at-b)$ при $t>\frac{b}{a}$
20.10	$e^{ap}\left[\bar{f}(p)-p\int\limits_0^a e^{-pu}\,\varphi(u)\,du\right]$	$\varphi(t+a),\quad a\geqslant 0$
20.11	$\dfrac{p\int\limits_0^a e^{-pt}\,\varphi(t)\,dt}{1-e^{-ap}}$	$\varphi(t)$—периодическая функция с периодом $a>0$ $[\varphi(t)=\varphi(t+a)]$
20.12	$p\bar{f}\left(\frac{1}{p}\right)$	$\int\limits_0^\infty J_0(2\sqrt{t\tau})\,\varphi(\tau)\,d\tau$
20.13	$\sqrt{p}\,\bar{f}\left(\frac{1}{p}\right)$	$\int\limits_0^\infty \frac{\sin(2\sqrt{t\tau})}{\sqrt{\pi\tau}}\,\varphi(\tau)\,d\tau$
20.14	$-\sqrt{p}\,\bar{f}\left(-\frac{1}{p}\right)$	$\int\limits_0^\infty \frac{\operatorname{sh}(2\sqrt{t\tau})}{\sqrt{\pi\tau}}\,\varphi(\tau)\,d\tau$
20.15	$p^{\frac{3}{2}}\bar{f}\left(\frac{1}{p}\right)$	$\int\limits_0^\infty \frac{\cos(2\sqrt{t\tau})}{\sqrt{\pi t}}\,\varphi(\tau)\,d\tau$
20.16	$-p^{\frac{3}{2}}\bar{f}\left(-\frac{1}{p}\right)$	$\int\limits_0^\infty \frac{\operatorname{ch}(2\sqrt{t\tau})}{\sqrt{\pi t}}\,\varphi(\tau)\,d\tau$
20.17	$p^{\frac{1}{\nu-1}}\,\bar{f}\left(\frac{1}{p}\right)$	$t^{\frac{\nu}{2}}\int\limits_0^\infty \frac{J_\nu(2\sqrt{t\tau})}{\tau^{\frac{\nu}{2}}}\,\varphi(\tau)\,d\tau$ $\operatorname{Re}\nu>-1$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
20.18	$\dfrac{\bar{f}\left(p+\frac{1}{p}\right)}{p+\frac{1}{p}}$	$\int_0^t J_0(2\sqrt{(t-\tau)\tau})\,\varphi(\tau)\,d\tau$
20.19	$\frac{p}{2}\left[\frac{\bar{f}(p-\alpha)}{p-\alpha}+\frac{\bar{f}(p+\alpha)}{p+\alpha}\right]$	$\operatorname{ch}\alpha t\,\varphi(t)$
20.20	$\frac{p}{2}\left[\frac{\bar{f}(p-\alpha)}{p-\alpha}-\frac{\bar{f}(p+\alpha)}{p+\alpha}\right]$	$\operatorname{sh}\alpha t\,\varphi(t)$
20.21	$\frac{p}{2}\left[\frac{\bar{f}(p-i\alpha)}{p-i\alpha}+\frac{\bar{f}(p+i\alpha)}{p+i\alpha}\right]$	$\cos\alpha t\,\varphi(t)$
20.22	$\frac{p}{2i}\left[\frac{\bar{f}(p-i\alpha)}{p-i\alpha}-\frac{\bar{f}(p+i\alpha)}{p+i\alpha}\right]$	$\sin\alpha t\,\varphi(t)$
20.23	$\bar{f}\left(\frac{1}{p^2}\right)$	$\frac{t\sqrt{\pi}}{2}\int_0^\infty J^{(2)}_{1,\frac{1}{2}}\left[3\sqrt[3]{\frac{t^2\xi}{4}}\right]\varphi(\xi)\frac{d\xi}{\xi}$
20.24	$p^2\bar{f}\left(\frac{1}{p^2}\right)$	$\int_0^\infty\left[1-2\sqrt{\pi}\times\right.$ $\left.\times J^{(2)}_{1,\frac{1}{2}}\left(3\sqrt[3]{\frac{t^2\xi}{4}}\right)\right]\varphi(\xi)\,d\xi$
20.25	$p^n\bar{f}\left(\frac{1}{p^n}\right)$	$\int_0^\infty {}_0F_n\left(\frac{1}{n},\frac{2}{n},\ldots,\frac{n-1}{n},1;\right.$ $\left.-\frac{\tau t^n}{n^n}\right)\varphi(\tau)\,d\tau$
20.26	$\bar{f}(\sqrt{p})$	$\frac{1}{\sqrt{\pi t}}\int_0^\infty\exp\left(-\frac{\tau^2}{4t}\right)\varphi(\tau)\,d\tau$
20.27	$\sqrt{p}\,\bar{f}(\sqrt{p})$	$\frac{1}{2t\sqrt{\pi t}}\int_0^\infty\tau\exp\left(-\frac{\tau^2}{4t}\right)\varphi(\tau)\,d\tau$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
20.28	$p^{\frac{n+1}{2}}\bar{f}(\sqrt{p})$	$\frac{1}{2^{1+\frac{n}{2}}\sqrt{\pi}\,t^{1+\frac{n}{2}}}\int\limits_0^\infty \exp\left(-\frac{\tau^2}{4t}\right)\times \mathrm{He}_{n+1}\left(\frac{\tau}{\sqrt{2t}}\right)\varphi(\tau)\,d\tau$
20.29	$p^{\nu+\frac{1}{2}}\bar{f}(\sqrt{p})$	$\frac{\sqrt{2}}{\sqrt{\pi}\,(2t)^{\nu+1}}\int\limits_0^\infty \exp\left(-\frac{\tau^2}{8t}\right)\times D_{2\nu+1}\left(\frac{\tau}{\sqrt{2t}}\right)\varphi(\tau)\,d\tau$
20.30	$p^{\frac{1-\nu}{2}}\bar{f}\left(\frac{1}{\sqrt{p}}\right)$	$\frac{1}{\sqrt{\pi t}}\int\limits_0^\infty \exp\left(-\frac{x^2}{4t}\right)x^{\frac{\nu}{2}}\,dx\times\int\limits_0^\infty J_\nu(2\sqrt{xy})\,y^{-\frac{\nu}{2}}\varphi(y)\,dy$
20.31	$p^{\frac{n-\nu-1}{2}}\bar{f}\left(\frac{1}{\sqrt{p}}\right)$	$\frac{1}{\sqrt{\pi}\,t^{\frac{n}{2}+1}}\int\limits_0^\infty \exp\left(-\frac{x^2}{4t}\right)\times \mathrm{He}_n\left(\frac{x}{2\sqrt{t}}\right)dx\times\int\limits_0^\infty \varphi(y)J_\nu(2\sqrt{xy})\left(\frac{x}{y}\right)^{\frac{\nu}{2}}dy$
20.32	$\frac{p}{\sqrt{p+1}}\bar{f}\left(\sqrt{p+1}\right)$	$\int\limits_0^\infty \Psi(\tau,t)\varphi(\tau)\,d\tau-\int\limits_0^\infty du\int\limits_0^u \Psi(u,t)J_1(\tau)\varphi\left(\sqrt{u^2-\tau^2}\right)d\tau$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
20.33	$\frac{p}{\sqrt{p-1}}\bar{f}(\sqrt{p-1})$	$\int\limits_0^\infty \Psi(\tau, t)\varphi(\tau)\,d\tau+\int\limits_0^\infty\int\limits_0^u \Psi(u, t)\times$ $\times I_1(\tau)\varphi(\sqrt{u^2-\tau^2})\,du\,d\tau$
20.34	$\frac{p^{\frac{n+1}{2}}}{\sqrt{p+1}}\bar{f}(\sqrt{p+1})$	$(2t)^{-\frac{n}{2}}\int\limits_0^\infty \chi(\tau, t)\,\mathrm{He}_n\left(\frac{\tau}{\sqrt{2t}}\right)\times$ $\times\left[\varphi(\tau)-\int\limits_0^\tau \varphi(\sqrt{\tau^2-u^2})\times\right.$ $\left.\times J_1(u)\,du\right]d\tau$
20.35	$\frac{p^{\frac{n+1}{2}}}{\sqrt{p-1}}\bar{f}(\sqrt{p-1})$	$(2t)^{-\frac{n}{2}}\int\limits_0^\infty \chi(\tau, t)\,\mathrm{He}_n\left(\frac{\tau}{\sqrt{2t}}\right)\times$ $\times\left[\varphi(\tau)+\int\limits_0^\tau \varphi(\sqrt{\tau^2-u^2})\times\right.$ $\left.\times I_1(u)\,du\right]d\tau$
20.36	$\frac{p}{p^2+1}\bar{f}(\sqrt{p^2+1})$	$\int\limits_0^t J_0(\sqrt{t^2-\tau^2})\varphi(\tau)\,d\tau$
20.37	$\frac{p}{p^2-1}\bar{f}(\sqrt{p^2-1})$	$\int\limits_0^t I_0(\sqrt{t^2-\tau^2})\varphi(\tau)\,d\tau$
20.38	$\frac{p^2}{p^2+1}\bar{f}(\sqrt{p^2+1})$	$\varphi(t)-t\int\limits_0^t \frac{J_1(\sqrt{t^2-\tau^2})}{\sqrt{t^2-\tau^2}}\varphi(\tau)\,d\tau$
20.39	$\frac{p^2}{p^2-1}\bar{f}(\sqrt{p^2-1})$	$\varphi(t)+t\int\limits_0^t \frac{I_1(\sqrt{t^2-\tau^2})}{\sqrt{t^2-\tau^2}}\varphi(\tau)\,d\tau$

7 Зак. 1125

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
20.40	$\frac{p}{\sqrt{p^2+1}}\bar{f}\left(\sqrt{p^2+1}\right)$	$\varphi(t)-\int\limits_0^t \varphi\left(\sqrt{t^2-\tau^2}\right)J_1(\tau)\,d\tau$
20.41	$\frac{p}{\sqrt{p^2-1}}\bar{f}\left(\sqrt{p^2-1}\right)$	$\varphi(t)+\int\limits_0^t \varphi\left(\sqrt{t^2-\tau^2}\right)I_1(\tau)\,d\tau$
20.42	$\frac{p}{p+\sqrt{p}}\bar{f}\left(p+\sqrt{p}\right)$	$\int\limits_0^t \Psi(\tau, t-\tau)\,\varphi(\tau)\,d\tau$
20.43	$\frac{\sqrt{p}}{p+\sqrt{p}}\bar{f}\left(p+\sqrt{p}\right)$	$\int\limits_0^t \chi(\tau, t-\tau)\,\varphi(\tau)\,d\tau$
20.44	$\bar{f}(\ln p)$	$\int\limits_0^\infty \frac{t^\xi \varphi'(\xi)}{\Gamma(\xi+1)}\,d\xi+\varphi(0)$
20.45	$\frac{\bar{f}(\ln p)}{\ln p}$	$\int\limits_0^\infty \frac{t^\tau}{\Gamma(\tau+1)}\varphi(\tau)\,d\tau$
20.46	$\frac{p}{\ln p}\bar{f}(\ln p)$	$\int\limits_0^\infty \frac{t^{\tau-1}}{\Gamma(\tau)}\varphi(\tau)\,d\tau$
20.47	$\frac{p}{\ln p^\nu}\bar{f}(\ln p^\nu)$	$\int\limits_0^\infty \frac{t^{\nu\tau-1}}{\Gamma(\nu\tau)}\varphi(\tau)\,d\tau$
20.48	$p\frac{d^n}{dp^n}\left(\frac{\bar{f}(p)}{p}\right)$	$(-t)^n\varphi(t)$
20.49	$(-1)^n\left(p\frac{d}{dp}\right)^n\bar{f}(p)$	$\left(t\frac{d}{dt}\right)^n\varphi(t)$
20.50	$(-1)^n p\left(\frac{1}{p}\frac{d}{dp}\right)^n\left[\frac{\bar{f}(p)}{p}\right]$	$\int\limits_0^t t\int\limits_0^t\dots t\int\limits_0^t t\varphi(t)\,(dt)^n$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
20.51	$\bar{f}(p)\,\bar{g}(p)$	$\frac{d}{dt}\int_0^t \varphi(t-\tau)\,g(\tau)\,d\tau$
20.52	$p\int_p^\infty p\int_p^\infty \ldots p\int_p^\infty \bar{f}(p)\,(dp)^n$	$\left(\frac{1}{t}\frac{d}{dt}\right)^n \varphi(t)$, $\left[\left(\frac{1}{t}\frac{d}{dt}\right)^s \varphi(t)\right]_{t=0}=0$ при $s=0,\ 1,\ \ldots,\ (n-1)$
20.53	$p\int_p^\infty \ldots \int_p^\infty \frac{\bar{f}(p)}{p}\,(dp)^n$	$\frac{\varphi(t)}{t^n}$
20.54	$\int_p^\infty \frac{\bar{f}(z)}{z}\,dz$	$\int_0^t \frac{\varphi(\tau)}{\tau}\,d\tau$
20.55	$\int_0^p \frac{\bar{f}(z)}{z}\,dz$	$\int_t^\infty \frac{\varphi(\tau)}{\tau}\,d\tau$
20.56	$\frac{p}{\sqrt{\pi}}\int_0^\infty \exp\left(-\frac{p^2x^2}{4}\right)\bar{f}\left(\frac{1}{x^2}\right)dx$	$\varphi(t^2)$

§ 21. Рациональные функции

21.1	1	1
21.2	$\frac{1}{p}$	t
21.3	$\frac{1}{p-a}$	$\frac{e^{at}-1}{a}$
21.4	$\frac{p}{p+a}$	e^{-at}
21.5	$\frac{p}{p-\ln a}$	$a^t,\quad a>1$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
21.6	$p\sum\limits_{k=0}^{n}\binom{n}{k}\frac{a^{n-k}}{p+k}$	$(a+e^{-t})^n$
21.7	$\frac{1}{p^2+a^2}$	$\frac{1}{a^2}(1-\cos at)$
21.8	$\frac{p}{p^2+a^2}$	$\frac{\sin at}{a}$
21.9	$\frac{p+\alpha}{p^2+a^2}$	$\frac{\alpha}{a^2}-\frac{\sqrt{a^2+\alpha^2}}{a^2}\cos(at+\lambda)$ $\lambda=\operatorname{arctg}\frac{a}{\alpha}$
21.10	$\frac{\alpha p^2+\beta p}{(p+a)(p+b)}$	$\frac{\alpha a-\beta}{a-b}e^{-at}+\frac{\alpha b-\beta}{b-a}e^{-bt}$
21.11	$\frac{p^2}{p^2+a^2}$	$\cos at$
21.12	$\frac{p^2+2a^2}{p^2+4a^2}$	$\cos^2 at$
21.13	$\frac{(p-a)^2}{p^2+a^2}$	$1-2\sin at$
21.14	$\frac{p(p+\alpha)}{p^2+a^2}$	$\frac{1}{a}\sqrt{\alpha+a^2}\sin(at+\lambda),\ \lambda=\operatorname{arctg}\frac{a}{\alpha}$
21.15	$\frac{p^2+\alpha p+\beta}{p^2+a^2}$	$\frac{\beta}{a^2}-\frac{\sqrt{(\beta-a^2)^2+\alpha^2a^2}}{a^2}\cos(at+\lambda),$ $\lambda=\operatorname{arctg}\frac{\alpha a}{\beta-a^2}$
21.16	$\frac{1}{p^2-a^2}$	$\frac{1}{a^2}(\operatorname{ch} at-1)$
21.17	$\frac{p}{p^2-a^2}$	$\frac{\operatorname{sh} at}{a}$
21.18	$\frac{p^2}{p^2-a^2}$	$\operatorname{ch} at$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
21.19	$\dfrac{p^2-2a^2}{p^2-4a^2}$	$\operatorname{ch}^2 at$
21.20	$\dfrac{p+\alpha}{p(p+a)}$	$\dfrac{\alpha-a}{a^2}e^{-at}+\dfrac{\alpha}{a}t+\dfrac{a-\alpha}{a^2}$
21.21	$\dfrac{p^2+\alpha p+\beta}{p(p+a)}$	$\dfrac{a^2-\alpha a+\beta}{a^2}e^{-at}+\dfrac{\beta}{a}t+\dfrac{\alpha a-\beta}{a^2}$
21.22	$\dfrac{p}{(p+a)^2}$	te^{-at}
21.23	$\dfrac{p+\alpha}{(p+a)^2}$	$\dfrac{\alpha}{a^2}+\left(\dfrac{a-\alpha}{a}t-\dfrac{\alpha}{a^2}\right)e^{-at}$
21.24	$\dfrac{p^2}{(p+a)^2}$	$(1-at)\,e^{-at}$
21.25	$\dfrac{p(p+2a)}{(p+a)^2}$	$(1+at)\,e^{-at}$
21.26	$\dfrac{(p-a)^2}{(p+a)^2}$	$1-4at\,e^{-at}$
21.27	$\dfrac{p(p+\alpha)}{(p+a)^2}$	$[(\alpha-a)\,t+1]\,e^{-at}$
21.28	$\dfrac{p^2+\alpha p+\beta}{(p+a)^2}$	$\dfrac{\beta}{a^2}+\left(\dfrac{\alpha a-\beta-a^2}{a}t+\dfrac{a^2-\beta}{a^2}\right)e^{-at}$
21.29	$\dfrac{p}{(p+a)(p+b)}$	$\dfrac{e^{-bt}-e^{-at}}{a-b}$
21.30	$\dfrac{p+\alpha}{(p+a)(p+b)}$	$\dfrac{\alpha}{ab}+\dfrac{\alpha-a}{a(a-b)}e^{-at}+\dfrac{\alpha-b}{b(b-a)}e^{-bt}$
21.31	$\dfrac{p^2}{(p+a)(p+b)}$	$\dfrac{be^{-bt}-ae^{-at}}{b-a}$
21.32	$\dfrac{p^2+(a+b)\,p}{(p+a)(p+b)}$	$\dfrac{ae^{-bt}-be^{-at}}{a-b}$
21.33	$\dfrac{(p-a)(p-b)}{(p+a)(p+b)}$	$1+2\dfrac{a+b}{a-b}(e^{-at}-e^{-bt})$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
21.34	$\dfrac{p(p+\alpha)}{(p+a)(p+b)}$	$\dfrac{(\alpha-a)e^{-at}-(\alpha-b)e^{-bt}}{b-a}$
21.35	$\dfrac{p^2+\alpha p+\beta}{(p+a)(p+b)}$	$\dfrac{\beta}{ab}+\dfrac{a^2-\alpha a+\beta}{a(a-b)}e^{-at}-$ $-\dfrac{b^2-\alpha b+\beta}{b(a-b)}e^{-bt}$
21.36	$\dfrac{p}{(p+a)^2-b^2}$	$e^{-at}\dfrac{\operatorname{sh} bt}{b}$
21.37	$\dfrac{p}{(p+a)^2+b^2}$	$e^{-at}\dfrac{\sin bt}{b}$
21.38	$\dfrac{p^2}{(p+a)^2+b^2}$	$\left(\cos bt-\dfrac{a}{b}\sin bt\right)e^{-at}$
21.39	$\dfrac{p(p+a)}{(p+a)^2+b^2}$	$e^{-at}\cos bt$
21.40	$\dfrac{p(p+a)}{(p+a)^2-b^2}$	$e^{-at}\operatorname{ch} bt$
21.41	$\dfrac{p(p+\alpha)}{(p+a)^2+b^2}$	$\dfrac{1}{b}\sqrt{(\alpha-a)^2+b^2}\,e^{-at}\sin(bt+\lambda)$ $\lambda=\operatorname{arctg}\dfrac{b}{\alpha-a}$
21.42	$\dfrac{p^2+\alpha p+\beta}{(p+a)^2+b^2}$	$\dfrac{\beta}{\mu^2}+\dfrac{1}{b\mu}\times$ $\times\sqrt{(a^2-b^2-\alpha a+\beta)^2+b^2(\alpha-2a)^2}\times$ $\times e^{-at}\sin(bt+\lambda),\quad \mu^2=a^2+b^2$ $\lambda=\operatorname{arctg}\dfrac{b(\alpha-2a)}{a^2-b^2-\alpha a+\beta}-$ $-\operatorname{arctg}\left(-\dfrac{b}{a}\right)$
21.43	$\dfrac{pb\cos\alpha+p(p+a)\sin\alpha}{(p+a)^2+b^2}$	$e^{-at}\sin(bt+\alpha)$
21.44	$\dfrac{p(p+a)\cos\alpha-pb\sin\alpha}{(p+a)^2+b^2}$	$e^{-at}\cos(bt+\alpha)$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
21.45	$\dfrac{p}{p^3+a^3}$	$\dfrac{1}{a^2}s_2(at)$
21.46	$\dfrac{p^2}{p^3+a^3}$	$-\dfrac{1}{a}s_3(at)$
21.47	$\dfrac{p^3}{p^3+a^3}$	$s_1(at)$
21.48	$\dfrac{p}{(p+a)^3}$	$\dfrac{t^2e^{-at}}{2}$
21.49	$\dfrac{p^2}{(p+a)^3}$	$t\left(1-\dfrac{at}{2}\right)e^{-at}$
21.50	$\dfrac{p^2+\alpha p+\beta}{p(p+a)^2}$	$\left[\dfrac{a^2-\alpha a+\beta}{a^2}t+\dfrac{2\beta-\alpha a}{a^3}\right]e^{-at}+$ $+\dfrac{\beta t}{a^2}+\dfrac{\alpha a-2\beta}{a^3}$
21.51	$\dfrac{p+\alpha}{p(p+a)(p+b)}$	$\dfrac{\alpha-a}{a^2(b-a)}e^{-at}+\dfrac{\alpha-b}{b^2(a-b)}e^{-bt}+$ $+\dfrac{\alpha}{ab}t+\dfrac{ab-\alpha(a+b)}{a^2b^2}$
21.52	$\dfrac{p^2+\alpha p+\beta}{p(p+a)(p+b)}$	$\dfrac{a^2-\alpha a+\beta}{a^2(b-a)}e^{-at}+$ $+\dfrac{b^2-\alpha b+\beta}{b^2(a-b)}e^{-bt}+\dfrac{\beta t}{ab}+$ $+\dfrac{\alpha ab-\beta(a+b)}{a^2b^2}$
21.53	$\dfrac{p}{(p+a)(p+b)^2}$	$\dfrac{e^{-at}-[1-(a-b)t]e^{-bt}}{(a-b)^2}$
21.54	$\dfrac{p+\alpha}{(p+a)(p+b)^2}$	$\dfrac{\alpha}{ab^2}+\dfrac{a-\alpha}{a(b-a)^2}e^{-at}+$ $+\left[\dfrac{\alpha-b}{b(b-a)}t+\dfrac{2\alpha b-b^2-\alpha a}{b^2(b-a)^2}\right]e^{-bt}$
21.55	$\dfrac{p^2}{(p+a)(p+b)^2}$	$\dfrac{[a-b(a-b)t]e^{-bt}-ae^{-at}}{(a-b)^2}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
21.56	$\dfrac{p(p+\alpha)}{(p+a)(p+b)^2}$	$\dfrac{\alpha-a}{(b-a)^2}e^{-at}+\left[\dfrac{\alpha-b}{a-b}t+\dfrac{a-\alpha}{(a-b)^2}\right]e^{-bt}$
21.57	$\dfrac{p^2+\alpha p+\beta}{(p+a)(p+b)^2}$	$\dfrac{\beta}{ab^2}-\dfrac{a^2-\alpha a+\beta}{a(b-a)^2}e^{-at}+\left[\dfrac{b^2-\alpha b+\beta}{b(b-a)}t+\dfrac{(a-\alpha)b^2+(2b-a)\beta}{b^2(b-a)^2}\right]e^{-bt}$
21.58	$\dfrac{p(p^2+\alpha p+\beta)}{(p+a)(p+b)^2}$	$\dfrac{a^2-\alpha a+\beta}{(b-a)^2}e^{-at}+\left[\dfrac{b^2-\alpha b+\beta}{a-b}t+\dfrac{b^2-2ab+\alpha a-\beta}{(a-b)^2}\right]e^{-bt}$
21.59	$\dfrac{p}{(p+a)(p+b)(p+c)}$	$\dfrac{(c-b)e^{-at}+(a-c)e^{-bt}+(b-a)e^{-ct}}{(a-b)(b-c)(c-a)}$
21.60	$\dfrac{p^2}{(p+a)(p+b)(p+c)}$	$\dfrac{a}{(a-c)(b-a)}e^{-at}+\dfrac{b}{(b-c)(a-b)}e^{-bt}+\dfrac{c}{(c-b)(a-c)}e^{-ct}$
21.61	$\dfrac{p(p+\alpha)}{(p+a)(p+b)(p+c)}$	$\dfrac{\alpha-a}{(b-a)(c-a)}e^{-at}+\dfrac{\alpha-b}{(a-b)(c-b)}e^{-bt}+\dfrac{\alpha-c}{(a-c)(b-c)}e^{-ct}$
21.62	$\dfrac{p(p^2+\alpha p+\beta)}{(p+a)(p+b)(p+c)}$	$\dfrac{a^2-\alpha a+\beta}{(b-a)(c-a)}e^{-at}+\dfrac{b^2-\alpha b+\beta}{(a-b)(c-b)}e^{-bt}+\dfrac{c^2-\alpha c+\beta}{(a-c)(b-c)}e^{-ct}$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
21.63	$\frac{\alpha p^2+\beta p}{(p+a)^2}$	$[\alpha+(\beta-\alpha a)\,t]\,e^{-at}$
21.64	$\frac{\alpha p^2+\beta p}{(p+a)^2-b^2}$	$\alpha e^{-at}\operatorname{ch} bt+\frac{\beta-\alpha a}{b}e^{-at}\operatorname{sh} bt$
21.65	$\frac{\alpha p^3+\beta p^2+\gamma p}{(p+a)^3}$	$\alpha+(\beta-2\alpha a)\,t+$ $+\left[\frac{\alpha a^2-\beta a+\gamma}{2}t^2\right]e^{-at}$
21.66	$\frac{\alpha p^3+\beta p^2+\gamma p}{p^3+a^3}$	$\frac{\alpha a^2-\beta a+\gamma}{3a^2}e^{-at}-$ $-\frac{2\alpha a^2-\beta a-\gamma}{3a^2}e^{\frac{at}{2}}\cos\left(\frac{\sqrt{3}}{2}at\right)+$ $+\frac{\beta a-\gamma}{\sqrt{3}\,a^2}e^{\frac{at}{2}}\sin\left(\frac{\sqrt{3}}{2}at\right)$
21.67	$\frac{1}{p(p^2+a^2)}$	$\frac{t}{a^2}-\frac{\sin at}{a^3}$
21.68	$\frac{1}{p(p^2-a^2)}$	$\frac{\operatorname{sh} at}{a^3}-\frac{t}{a^2}$
21.69	$\frac{p+\alpha}{p(p^2+a^2)}$	$\frac{\alpha}{a^2}t+\frac{1}{a^2}-\frac{1}{a^3}\sqrt{a^2+\alpha^2}\sin\,(at+\lambda)$ $\lambda=\operatorname{arctg}\frac{a}{\alpha}$
21.70	$\frac{p^2+\alpha p+\beta}{p(p^2+a^2)}$	$\frac{\beta}{a^2}t+\frac{\alpha}{a^2}-\frac{1}{a^3}\times$ $\times\sqrt{(\beta-a^2)^2+\alpha^2a^2}\sin(at+\lambda)$ $\lambda=\operatorname{arctg}\frac{\alpha a}{\beta-a^2}$
21.71	$\frac{\alpha p^3+\beta p^2+\gamma p}{(p+a)^2(p+b)}$	$\left[\frac{a(a-2b)\,\alpha+\beta b-\gamma}{(a-b)^2}-\right.$ $\left.-\frac{a^2\alpha-a\beta+\gamma}{a-b}t\right]e^{-at}+$ $+\frac{\alpha b^2-\beta b+\gamma}{(a-b)^2}e^{-bt}$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
21.72	$\dfrac{\alpha p^3+\beta p^2+\gamma p}{[(p+a)^2+b^2](p+c)}$	$\left[\alpha-\dfrac{\alpha c^2-\beta c+\gamma}{(a-c)^2+b^2}\right]e^{-at}\cos bt+$ $+\dfrac{1}{b}\left[\beta-(a+c)\alpha-\right.$ $\left.-(a-c)\dfrac{\alpha c^2-\beta c+\gamma}{(a-c)^2+b^2}\right]e^{-at}\sin bt+$ $+\dfrac{\alpha c^2-\beta c+\gamma}{(a-c)^2+b^2}e^{-ct}$
21.73	$\dfrac{p+\alpha}{(p+a)(p^2+b^2)}$	$\dfrac{\alpha}{ab^2}+\dfrac{a-\alpha}{a(a^2+b^2)}e^{-at}-$ $-\dfrac{1}{b^2}\sqrt{\dfrac{\alpha^2+b^2}{a^2+b^2}}\cos(bt+\lambda)$ $\lambda=\operatorname{arctg}\dfrac{b}{\alpha}-\operatorname{arctg}\dfrac{b}{a}$
21.74	$\dfrac{p(p+\alpha)}{(p+a)(p^2+b^2)}$	$\dfrac{\alpha-a}{a^2+b^2}e^{-at}+$ $+\dfrac{1}{b}\sqrt{\dfrac{\alpha^2+b^2}{a^2+b^2}}\sin(bt+\lambda)$ $\lambda=\operatorname{arctg}\dfrac{b}{\alpha}-\operatorname{arctg}\dfrac{b}{a}$
21.75	$\dfrac{p^2+\alpha p+\beta}{(p+a)(p^2+b^2)}$	$\dfrac{\beta}{ab^2}-\dfrac{a^2-\alpha a+\beta}{a(a^2+b^2)}e^{-at}-$ $-\dfrac{1}{b^2}\sqrt{\dfrac{(\beta-b^2)^2+\alpha^2b^2}{a^2+b^2}}\cos(bt+\lambda)$ $\lambda=\operatorname{arctg}\dfrac{\alpha b}{\beta-b^2}-\operatorname{arctg}\dfrac{b}{a}$
21.76	$\dfrac{p(p^2+\alpha p+\beta)}{(p+a)(p^2+b^2)}$	$\dfrac{a^2-\alpha a+\beta}{a^2+b^2}e^{-at}+$ $+\dfrac{1}{b}\sqrt{\dfrac{(\beta-b^2)^2+\alpha^2b^2}{a^2+b^2}}\sin(bt+\lambda)$ $\lambda=\operatorname{arctg}\dfrac{\alpha b}{\beta-b^2}-\operatorname{arctg}\dfrac{b}{a}$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
21.77	$\dfrac{\alpha p^3+\beta p^2+\gamma p}{(p+a)(p+b)(p+c)}$	$\dfrac{\alpha a^2+\beta a+\gamma}{(a-b)(a-c)}e^{-at}+$ $+\dfrac{\alpha b^2-\beta b+\gamma}{(b-a)(b-c)}e^{-bt}+$ $+\dfrac{\alpha c^2-\beta c+\gamma}{(c-a)(c-b)}e^{-ct}$
21.78	$\dfrac{1}{p\,[(p+a)^2+b^2]}$	$\dfrac{1}{\mu^2}\left[t-\dfrac{2a}{\mu^2}+\dfrac{1}{b}e^{-at}\sin(bt-\lambda)\right]$ $\lambda=2\,\mathrm{arctg}\left(-\dfrac{b}{a}\right)$ $\mu^2=a^2+b^2$
21.79	$\dfrac{1}{[(p+a)^2+b^2](p+c)}$	$\dfrac{1}{c\mu^2}-\dfrac{1}{c\,[(a-c)^2+b^2]}e^{-ct}+$ $+\dfrac{1}{b\mu\sqrt{(c-a)^2+b^2}}e^{-at}\sin(bt-\lambda)$ $\lambda=\mathrm{arctg}\left(-\dfrac{b}{a}\right)+\mathrm{arctg}\dfrac{b}{c-a}$ $\mu^2=a^2+b^2$
21.80	$\dfrac{p}{(p+a)\,[(p+a)^2+b^2]}$	$\dfrac{2}{b^2}\sin^2\left(\dfrac{bt}{2}\right)e^{-at}$
21.81	$\dfrac{p+\alpha}{[(p+a)^2+b^2](p+c)}$	$\dfrac{\alpha}{c\mu^2}+\dfrac{c-\alpha}{c\,[(a-c)^2+b^2]}e^{-ct}+$ $+\dfrac{1}{b\mu}\sqrt{\dfrac{(\alpha-a)^2+b^2}{(c-a{}^2+b^2}}\times$ $\times e^{-at}\sin(bt+\lambda),$ $\lambda=\mathrm{arctg}\dfrac{b}{\alpha-a}-\mathrm{arctg}\dfrac{b}{c-a}-$ $-\mathrm{arctg}\left(-\dfrac{b}{a}\right),\ \mu^2=a^2+b^2$
21.82	$\dfrac{p\,(p+\alpha)}{[(p+a)^2+b^2](p+c)}$	$\dfrac{\alpha-c}{(a-c)^2+b^2}e^{-ct}+$ $+\dfrac{1}{b}\sqrt{\dfrac{(\alpha-a)^2+b^2}{(c-a)^2+b^2}}\times$ $\times e^{-at}\sin(bt+\lambda),$ $\lambda=\mathrm{arctg}\dfrac{b}{\alpha-a}-\mathrm{arctg}\dfrac{b}{c-a}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
21.83	$\frac{p(p^2+\alpha p+\beta)}{[(p+a)^2+b^2](p+c)}$	$\frac{c^2-\alpha c-\beta}{(a-c)^2+b^2}e^{-ct}+$ $+\frac{1}{b}\sqrt{\frac{(a^2-b^2-\alpha a+\beta)^2+b^2(\alpha-2a)^2}{(c-a)^2+b^2}}\times$ $\times e^{-at}\sin(bt+\lambda)$, $\lambda=\operatorname{arctg}\frac{b(\alpha-2a)}{a^2-b^2-\alpha a+\beta}-$ $-\operatorname{arctg}\frac{b}{c-a}$
21.84	$\frac{\alpha p^4+\beta p^3+\gamma p^2+\delta p}{p^4+4a^4}$	$\alpha\cos(at)\operatorname{ch}(at)+$ $+\frac{2a^2\beta-\delta}{4a^3}\cos(at)\operatorname{sh}(at)+$ $+\frac{2a^2\beta+\delta}{4a^3}\sin(at)\operatorname{ch}(at)+$ $+\frac{\gamma}{2a^2}\sin(at)\operatorname{sh}(at)$
21.85	$\frac{\alpha p^4+\beta p^3+\gamma p^2+\delta p}{p^4-a^4}$	$\frac{\alpha a^3-\gamma a}{2a^3}\cos(at)+\frac{a^2\beta-\delta}{2a^3}\sin(at)+$ $+\frac{\alpha a^3+\gamma a}{2a^3}\operatorname{ch}(at)+\frac{a^2\beta+\delta}{2a^3}\operatorname{sh}(at)$
21.86	$(\alpha p^3+\beta p^2+\gamma p+\delta)\frac{p}{(p^2+a^2)^2}$	$\alpha\cos(at)+\frac{\delta+a^2\beta}{2a^3}\sin(at)+$ $+\frac{\gamma-a^2\alpha}{2a}t\sin(at)-\frac{\delta-a^2\beta}{2a^2}t\cos(at)$
21.87	$(\alpha p^3+\beta p^2+\gamma p+\delta)\frac{p}{(p^2+a^2)(p^2+b^2)}$	$\frac{(\gamma-a^2\alpha)}{b^2-a^2}\cos(at)+$ $+\frac{\delta-a^2\beta}{a(b^2-a^2)}\sin(at)-$ $-\frac{\gamma-\alpha b^2}{b^2-a^2}\cos(bt)-$ $-\frac{\delta-b^2\beta}{b(b^2-a^2)}\sin(bt)$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
21.88	$\frac{p}{p^4+a^4}$	$\frac{1}{\sqrt{2}\,a^3}\left[\operatorname{ch}\left(\frac{a}{\sqrt{2}}t\right)\times\sin\left(\frac{a}{\sqrt{2}}t\right)-\operatorname{sh}\left(\frac{a}{\sqrt{2}}t\right)\times\cos\left(\frac{a}{\sqrt{2}}t\right)\right]$
21.89	$\frac{p^2}{p^4+a^4}$	$\frac{1}{a^2}\sin\left(\frac{a}{\sqrt{2}}t\right)\operatorname{sh}\left(\frac{a}{\sqrt{2}}t\right)$
21.90	$\frac{p^3}{p^4+a^4}$	$\frac{1}{\sqrt{2}\,a}\left[\cos\left(\frac{a}{\sqrt{2}}t\right)\operatorname{sh}\left(\frac{a}{\sqrt{2}}t\right)+\sin\left(\frac{a}{\sqrt{2}}t\right)\operatorname{ch}\left(\frac{a}{\sqrt{2}}t\right)\right]$
21.91	$\frac{p(p^2+2a^2)}{p^4+4a^4}$	$\frac{1}{a}\sin(at)\operatorname{ch}(at)$
21.92	$\frac{p(p^2-2a^2)}{p^4+4a^4}$	$\frac{1}{a}\cos(at)\operatorname{sh}(at)$
21.93	$\frac{p^4}{p^4+a^4}$	$\cos\left(\frac{a}{\sqrt{2}}t\right)\operatorname{ch}\left(\frac{a}{\sqrt{2}}t\right)$
21.94	$\frac{p^4}{p^4-a^4}$	$\frac{1}{2}(\operatorname{ch}at+\cos at)$
21.95	$\frac{p}{p^4-a^4}$	$\frac{1}{2a^3}(\operatorname{sh}at-\sin at)$
21.96	$\frac{p^2}{p^4-a^4}$	$\frac{1}{2a^2}(\operatorname{ch}at-\cos at)$
21.97	$\frac{p^3}{p^4-a^4}$	$\frac{1}{2a}(\operatorname{sh}at+\sin at)$
21.98	$\frac{1}{(p^2+a^2)^2}$	$\frac{1}{a^4}(1-\cos at)-\frac{1}{2a^3}t\sin at$
21.99	$\frac{p}{(p^2+a^2)^2}$	$\frac{\sin at}{2a^3}-\frac{t\cos at}{2a^2}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,d$	$f(t)$
21.100	$\frac{p}{(p^2-a^2)^2}$	$\frac{t\,\mathrm{ch}\,at}{2a^2}-\frac{\mathrm{sh}\,at}{2a^3}$
21.101	$\frac{p^2+\alpha p+\beta}{(p^2+a^2)^2}$	$\frac{\beta}{a^4}-\frac{\sqrt{(\beta-a^2)^2+\alpha^2a^2}}{2a^3}\times$ $\times\, t\sin(at+\lambda)-$ $-\frac{\sqrt{4\beta^2+\alpha^2a^2}}{2a^4}\cos(at+\mu)$ $\lambda=\mathrm{arctg}\,\frac{\alpha a}{\beta-a^2},\quad \mu=\mathrm{arctg}\,\frac{\alpha a}{2\beta}$
21.102	$\frac{p^3}{(p^2+a^2)^2}$	$\frac{1}{2a}(\sin at+at\cos at)$
21.103	$\frac{p(p^2-a^2)}{(p^2+a^2)^2}$	$\cos at$
21.104	$\frac{1}{p^2(p^2+a^2)}$	$\frac{1}{a^4}(\cos at-1)+\frac{1}{2a^2}t^2$
21.105	$\frac{1}{p^2(p^2-a^2)}$	$\frac{1}{a^4}(\mathrm{ch}\,at-1)-\frac{1}{2a^2}t^2$
21.106	$\frac{p}{(p^2+a^2)(p+b)^2}$	$\frac{1}{a(a^2+b^2)}\sin(at-\lambda)+$ $+\left[\frac{1}{a^2+b^2}t+\frac{2b}{(a^2+b^2)^2}\right]e^{-bt}$ $\lambda=2\,\mathrm{arctg}\,\frac{a}{b}$
21.107	$\frac{p+\alpha}{(p^2+a^2)(p+b)^2}$	$\frac{\alpha}{a^2b^2}-\frac{\sqrt{\alpha^2+a^2}}{a^2(a^2+b^2)}\cos(at+\lambda)+$ $+\left[\frac{b-\alpha}{b(a^2+b^2)}t+\right.$ $\left.+\frac{2b^3-3\alpha b^2-\alpha a^2}{b^2(a^2+b^2)^2}\right]e^{-bt}$ $\lambda=\mathrm{arctg}\,\frac{a}{\alpha}-2\,\mathrm{arctg}\,\frac{a}{b}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
21.108	$\dfrac{p(p^2+\alpha p+\beta)}{(p^2+a^2)(p+b)^2}$	$\dfrac{\sqrt{(\beta-a^2)^2+\alpha^2a^2}}{a(a^2+b^2)}\sin(at+\lambda)+\left[\dfrac{b^2-\alpha b+\beta}{a^2+b^2}t+\dfrac{\alpha(a^2-b^2)+2b(\beta-a^2)}{(a^2+b^2)^2}\right]e^{-bt}$, $\lambda=\operatorname{arctg}\dfrac{\alpha a}{\beta-a^2}-2\operatorname{arctg}\dfrac{a}{b}$
21.109	$\dfrac{p(p^2+\alpha p+\beta)}{(p^2+a^2)(p+b)(p+c)}$	$\dfrac{b^2-\alpha b+\beta}{(c-b)(a^2+b^2)}e^{-bt}+\dfrac{c^2-\alpha c+\beta}{(b-c)(a^2+c^2)}e^{-ct}+\dfrac{1}{a}\sqrt{\dfrac{(\beta-a^2)^2+\alpha^2a^2}{(a^2+b^2)(a^2+c^2)}}\sin(at+\lambda)$, $\lambda=\operatorname{arctg}\dfrac{\alpha a}{\beta-a^2}-\operatorname{arctg}\dfrac{a}{b}-\operatorname{arctg}\dfrac{a}{c}$
21.110	$\dfrac{p(p^3+\alpha p^2+\beta p+\gamma)}{(p^2+a^2)(p+b)(p+c)}$	$\dfrac{-b^3+\alpha b^2-\beta b+\gamma}{(c-b)(a^2+b^2)}e^{-bt}+\dfrac{-c^3+\alpha c^2-\beta c+\gamma}{(b-c)(a^2+c^2)}e^{-ct}+\dfrac{1}{a}\sqrt{\dfrac{(\gamma-\alpha a^2)^2+a^2(\beta-a^2)^2}{(a^2+b^2)(a^2+c^2)}}\times\sin(at+\lambda)$, $\lambda=\operatorname{arctg}\dfrac{a(\beta-a^2)}{\gamma-\alpha a^2}-\operatorname{arctg}\dfrac{a}{b}-\operatorname{arctg}\dfrac{a}{c}$
21.111	$\dfrac{p}{[(p+a)^2+b^2]^2}$	$\dfrac{1}{2b^3}e^{-at}(\sin bt-bt\cos bt)$
21.112	$\dfrac{p(p+a)}{[(p+a)^2+b^2]^2}$	$\dfrac{1}{2b}te^{-at}\sin bt$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
21.113	$\frac{p(p^2+\alpha)}{[(p+a)^2+b^2]^2}$	$\frac{\mu^2+\alpha}{2b^3}e^{-at}\sin bt-$ $-\frac{\sqrt{(a^2-b^2+\alpha)^2+4a^2b^2}}{2b^2}\times$ $\times te^{-at}\cos(bt+\lambda)$ $\lambda=\operatorname{arctg}\frac{-2ab}{a^2-b^2+\alpha},\quad \mu^2=a^2+b^2$
21.114	$\frac{p[(p+a)^2-b^2]}{[(p+a)^2+b^2]^2}$	$te^{-at}\cos bt$
21.115	$\frac{p}{(p^2+a^2)(p^2+9a^2)}$	$\frac{\sin^3 at}{6a^3}$
21.116	$\frac{p}{(p^2+a^2)(p^2+b^2)}$	$\frac{a\sin bt-b\sin at}{ab(a^2-b^2)}$
21.117	$\frac{p^2}{(p^2+a^2)(p^2+b^2)}$	$\frac{\cos bt-\cos at}{a^2-b^2}$
21.118	$\frac{p^2}{[p^2+(a-b)^2][p^2+(a+b)^2]}$	$\frac{\sin at\sin bt}{2ab}$
21.119	$\frac{p^3}{(p^2+a^2)(p^2+b^2)}$	$\frac{a\sin at-b\sin bt}{a^2-b^2}$
21.120	$\frac{p(p^2+a^2-b^2)}{[p^2+(a-b)^2][p^2+(a+b)^2]}$	$\frac{\sin at\cos bt}{a}$
21.121	$\frac{p(p^2+\alpha p+\beta)}{(p^2+a^2)(p^2+b^2)}$	$\frac{\sqrt{(\beta-a^2)^2+\alpha^2a^2}}{a(b^2-a^2)}\sin(at+\lambda)+$ $+\frac{\sqrt{(\beta-b^2)^2+\alpha^2b^2}}{b(a^2-b^2)}\sin(bt+\mu),$ $\lambda=\operatorname{arctg}\frac{\alpha a}{\beta-a^2},\quad \mu=\operatorname{arctg}\frac{\alpha b}{\beta-b^2}$
21.122	$\frac{p^4}{(p^2+a^2)(p^2+b^2)}$	$\frac{a^2\cos at-b^2\cos bt}{a^2-b^2}$
21.123	$\frac{p^2(p^2+2^2)}{(p^2+1^2)(p^2+3^2)}$	$\frac{5}{2}\cos^3 t-\frac{3}{2}\cos t$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
21.124	$\dfrac{p^2(p^2+7a^2)}{(p^2+a^2)(p^2+9a^2)}$	$\cos^3 at$
21.125	$\dfrac{p^2(p^2+a^2+b^2)}{[p^2+(a-b)^2][p^2+(a+b)^2]}$	$\cos at\cos bt$
21.126	$\dfrac{p(p^3+\alpha p^2+\beta p+\gamma)}{(p^2+a^2)(p^2+b^2)}$	$\dfrac{\sqrt{(\gamma-\alpha a^2)^2+a^2(\beta-a^2)^2}}{a(b^2-a^2)}\times$ $\times\sin(at+\lambda)+$ $+\dfrac{\sqrt{(\gamma-\alpha b^2)^2+b^2(\beta-b^2)^2}}{b(a^2-b^2)}\times$ $\times\sin(bt+\mu),$ $\lambda=\operatorname{arctg}\dfrac{a(\beta-a^2)}{\gamma-\alpha a^2}$ $\mu=\operatorname{arctg}\dfrac{b(\beta-b^2)}{\gamma-\alpha b^2}$
21.127	$\dfrac{p}{(p^2-a^2)(p^2-b^2)}$	$\dfrac{b\operatorname{sh}at-a\operatorname{sh}bt}{ab(a^2-b^2)}$
21.128	$\dfrac{p^2}{(p^2-a^2)(p^2-b^2)}$	$\dfrac{\operatorname{ch}bt-\operatorname{ch}at}{b^2-a^2}$
21.129	$\dfrac{p^2}{[p^2-(a-b)^2][p^2-(a+b)^2]}$	$\dfrac{\operatorname{sh}at\operatorname{sh}bt}{2ab}$
21.130	$\dfrac{p^3}{(p^2-a^2)(p^2-b^2)}$	$\dfrac{a\operatorname{sh}at-b\operatorname{sh}bt}{a^2-b^2}$
21.131	$\dfrac{p(p^2-a^2+b^2)}{[p^2-(a-b)^2][p^2-(a+b)^2]}$	$\dfrac{\operatorname{sh}at\operatorname{ch}bt}{a}$
21.132	$\dfrac{p^4}{(p^2-a^2)(p^2-b^2)}$	$\dfrac{a^2\operatorname{ch}at-b^2\operatorname{ch}bt}{a^2-b^2}$
21.133	$\dfrac{p^2(p^2-a^2-b^2)}{[p^2-(a-b)^2][p^2-(a+b)^2]}$	$\operatorname{ch}at\operatorname{ch}bt$
21.134	$\dfrac{p^2+\alpha p+\beta}{p(p+a)^3}$	$\left(\dfrac{a^2-\alpha a+\beta}{2a^2}t^2+\dfrac{2\beta-\alpha a}{a^3}t+\right.$ $\left.+\dfrac{3\beta-\alpha a}{a^4}\right)e^{-at}+\dfrac{\beta}{a^3}t+\dfrac{\alpha a-3\beta}{a^4}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
21.135	$\dfrac{p(p+\alpha)}{(p+b)(p+a)^3}$	$\dfrac{\alpha-b}{(a-b)^3}e^{-bt}+\left[\dfrac{\alpha-a}{2(b-a)}t^2+\dfrac{b-\alpha}{(b-a)^2}t+\dfrac{\alpha-b}{(b-a)^3}\right]e^{-at}$
21.136	$\dfrac{p(p+\alpha)}{(p+a)^2(p+b)(p+c)}$	$\dfrac{\alpha-b}{(c-b)(a-b)^2}e^{-bt}+\dfrac{\alpha-c}{(b-c)(a-c)^2}e^{-ct}+\left[\dfrac{\alpha-a}{(b-a)(c-a)}t+\dfrac{2\alpha a-a^2-\alpha(b+c)+bc}{(b-a)^2(c-a)^2}\right]e^{-at}$
21.137	$\dfrac{p(p+\alpha)}{(p+a)^2(p+b)^2}$	$\left[\dfrac{\alpha-a}{(b-a)^2}+\dfrac{a+b-2\alpha}{(b-a)^3}\right]e^{-at}+\left[\dfrac{\alpha-b}{(a-b)^2}t+\dfrac{a+b-2\alpha}{(a-b)^3}\right]e^{-bt}$
21.138	$\dfrac{p(p^2+\alpha p+\beta)}{(p+a)^2(p+b)^2}$	$\left[\dfrac{a^2-\alpha a+\beta}{(b-a)^2}t+\dfrac{\alpha(a+b)-2(ab+\beta)}{(b-a)^3}\right]e^{-at}+\left[\dfrac{b^2-\alpha b+\beta}{(b-a)^2}t-\dfrac{\alpha(a+b)-2(ab+\beta)}{(b-a)^3}\right]e^{-bt}$
21.139	$\dfrac{p}{(p+c)^2[(p+a)^2+b^2]}$	$\dfrac{1}{(a-c)^2+b^2}\left[te^{-ct}+\dfrac{2(c-a)}{(a-c)^2+b^2}e^{-ct}-\dfrac{1}{b}e^{-at}\sin(bt-\lambda)\right],$ $\lambda=2\,\mathrm{arctg}\,\dfrac{b}{c-a}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
21.140	$\dfrac{p(p^2+\alpha p+\beta)}{(p+c)^2[(p+a)^2+b^2]}$	$\dfrac{c^2-\alpha c+\beta}{(a-c)^2+b^2}te^{-ct}+$ $+\left[\dfrac{(\alpha-2c)[(a-c)^2+b^2]}{[(a-c)^2+b^2]^2}-\right.$ $\left.-\dfrac{2(a-c)(c^2-\alpha c+\beta)}{[(a-c)^2+b^2]^2}\right]e^{-ct}+$ $+\dfrac{\sqrt{(a^2-b^2-\alpha a+\beta)^2+b^2(\alpha-2a)^2}}{b[(c-a)^2+b^2]}\times$ $\times e^{-at}\sin(bt+\lambda),$ $\lambda=\operatorname{arctg}\dfrac{b(\alpha-2a)}{a^2-b^2-\alpha a+\beta}-$ $-2\operatorname{arctg}\dfrac{b}{c-a}$
21.141	$\dfrac{p(p^2+\alpha p+\beta)}{(p+d)(p+c)[(p+a)^2+b^2]}$	$\dfrac{d^2-\alpha d+\beta}{(c-d)[(a-d)^2+b^2]}e^{-dt}+$ $+\dfrac{c^2-\alpha c+\beta}{(d-c)[(a-c)^2+b^2]}e^{-ct}+$ $+\dfrac{1}{b}\sqrt{\dfrac{(a^2-b^2-\alpha a+\beta)^2+b^2(\alpha-2a)^2}{[(c-a)^2+b^2][(d-a)^2+b^2]}}\times$ $\times e^{-at}\sin(bt+\lambda),$ $\lambda=\operatorname{arctg}\dfrac{b(\alpha-2a)}{a^2-b^2-\alpha a+\beta}-$ $-\operatorname{arctg}\dfrac{b}{d-a}-\operatorname{arctg}\dfrac{b}{c-a}$
21.142	$\dfrac{p}{(p^2+c^2)[(p+a)^2+b^2]}$	$\dfrac{1}{\sqrt{(\delta^2-c^2)^2+4a^2c^2}}\times$ $\times\left[\dfrac{1}{c}\sin(ct-\lambda)+\right.$ $\left.+\dfrac{1}{b}e^{-at}\sin(bt-\mu)\right]$ $\lambda=\operatorname{arctg}\dfrac{2ac}{\delta^2-c^2}$ $\mu=\operatorname{arctg}\dfrac{-2ab}{a^2-b^2+c^2}$ $\delta^2=a^2+b^2$

№	$\overline{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
21.143	$\dfrac{p(p+\alpha)}{(p^2+c^2)[(p+a)^2+b^2]}$	$\dfrac{1}{c}\sqrt{\dfrac{\alpha^2+c^2}{(\delta^2-c^2)^2+4a^2c^2}}\sin(ct+\lambda)+$ $+\dfrac{1}{b}\sqrt{\dfrac{(\alpha-a)^2+b^2}{(\delta^2-c^2)^2+4a^2c^2}}\times$ $\times e^{-at}\sin(bt+\mu);$ $\lambda=\operatorname{arctg}\dfrac{c}{\alpha}-\operatorname{arctg}\dfrac{2ac}{\delta^2-c^2},$ $\mu=\operatorname{arctg}\dfrac{b}{\alpha-a}-\operatorname{arctg}\dfrac{-2ab}{a^2-b^2+c^2},$ $\delta^2=a^2+b^2$
21.144	$\dfrac{p(p^2+\alpha p+\beta)}{(p^2+c^2)[(p+a)^2+b^2]}$	$\dfrac{1}{c}\sqrt{\dfrac{(\beta-c^2)^2+\alpha^2c^2}{(\delta^2-c^2)^2+4a^2c^2}}\sin(ct+\lambda)+$ $+\dfrac{1}{b}\sqrt{\dfrac{(a^2-b^2-\alpha a+\beta)^2+b^2(\alpha-2a)^2}{(\delta^2-c^2)^2+4a^2c^2}}\times$ $\times e^{-at}\sin(bt+\mu);$ $\lambda=\operatorname{arctg}\dfrac{\alpha c}{\beta-c^2}-\operatorname{arctg}\dfrac{2ac}{\delta^2-c^2},$ $\mu=\operatorname{arctg}\dfrac{b(\alpha-2a)}{a^2-b^2-\alpha a+\beta}-$ $-\operatorname{arctg}\dfrac{-2ab}{a^2-b^2+c^2},$ $\delta^2=a^2+b^2$
21.145	$\dfrac{3p^2+4a^2}{p(p^2+4a^2)^2}$	$\dfrac{t\sin^2 at}{2a^2}$
21.146	$\dfrac{p}{(p^2+a^2)^3}$	$\dfrac{1}{8a^5}[(3-a^2t^2)\sin at-3at\cos at]$
21.147	$\dfrac{p^2}{(p^2+a^2)^3}$	$\dfrac{t}{(2a)^3}(\sin at-at\cos at)$
21.148	$\dfrac{p^3}{(p^2+a^2)^3}$	$\dfrac{1}{(2a)^3}[(1+a^2t^2)\sin at-at\cos at]$
21.149	$\dfrac{p(3p^2-a^2)}{(p^2+a^2)^3}$	$\dfrac{t^2\sin at}{2a}$
21.150	$\dfrac{p}{(p^2-a^2)^3}$	$\dfrac{1}{8a^5}[(3+a^2t^2)\operatorname{sh}at-3at\operatorname{ch}at]$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
21.151	$\dfrac{p^2}{(p^2-a^2)^3}$	$\dfrac{t}{(2a)^3}(at\operatorname{ch}at-t\operatorname{sh}at)$
21.152	$\dfrac{p^3}{(p^2-a^2)^3}$	$\dfrac{1}{(2a)^3}[at\operatorname{ch}at-(1-a^2t^2)\operatorname{sh}at]$
21.153	$\dfrac{p(p^2+\alpha p+\beta)}{(p+a)(p^2+b^2)(p+c)^2}$	$\dfrac{a^2-\alpha a+\beta}{(a^2+b^2)(c-a)^2}e^{-at}+$ $+\dfrac{\sqrt{(\beta-b^2)^2+\alpha^2b^2}}{b(c^2+b^2)\sqrt{a^2+b^2}}\sin(bt+\lambda)+$ $+\dfrac{c^2-\alpha c+\beta}{(a-c)(c^2+b^2)}te^{-ct}+$ $+\dfrac{(a-c)(c^2+b^2)(\alpha-2c)}{(a-c)^2(c^2+b^2)^2}e^{-ct}-$ $-\dfrac{(c^2-\alpha c+\beta)(3c^2+b^2-2ac)}{(a-c)^2(c^2+b^2)^2}e^{-ct};$ $\lambda=\operatorname{arctg}\dfrac{\alpha b}{\beta-b^2}-$ $-\operatorname{arctg}\dfrac{b}{}-2\operatorname{arctg}\dfrac{b}{c}$
21.154	$\dfrac{p(p+\alpha)}{(p+d)(p^2+c^2)[(p+a)^2+b^2]}$	$\dfrac{\alpha-d}{(c^2+d^2)[(a-d)^2+b^2]}e^{-dt}+$ $+\dfrac{1}{c}\sqrt{\dfrac{\alpha^2+c^2}{(c^2+d^2)[(\delta^2-c^2)^2+4a^2c^2]}}\times$ $\times\sin(ct+\lambda)+$ $+\dfrac{1}{b}\sqrt{\dfrac{(\alpha-a)^2+b^2}{[(d-a)^2+b^2][(\delta^2-c^2)^2+4a^2c^2]}}\times$ $\times e^{-at}\sin(bt+\mu);$ $\lambda=\operatorname{arctg}\dfrac{c}{\alpha}-\operatorname{arctg}\dfrac{c}{d}-$ $-\operatorname{arctg}\dfrac{2ac}{\delta^2-c^2},$ $\mu=\operatorname{arctg}\dfrac{b}{\alpha-a}-\operatorname{arctg}\dfrac{b}{d-a}-$ $-\operatorname{arctg}\dfrac{-2ab}{a^2-b^2+c^2},$ $\delta^2=a^2+b^2$

№	$\overline{f}(p) \quad p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
21.155	$\frac{1}{p^n}$	$\frac{t^n}{n!}$
21.156	$p^{n+1}\left(1+\frac{1}{2}\frac{d}{dp}\right)^n \frac{1}{p^{n+1}}$	$P_n(1-t)$
21.157	$-\frac{(p-1)^{m-1}}{p^m}$	$\frac{t}{m}L'_m(t)$
21.158	$\frac{(1-p)^n}{p^{m+n}}$	$n!\,t^m T_m^n(t)$
21.159	$\left(1-\frac{1}{p}\right)^n$	$L_n(t)$
21.160	$p\left(1-\frac{1}{p}\right)^m$	$L'_m(t)$
21.161	$\frac{1}{(p+a)^n}$	$\frac{1}{a^n(n-1)!}\gamma(n, at)=$ $=a^{-n}[1-e^{-at}e_{n-1}(at)]$ $e_n(z)=1+\frac{z}{1!}+\ldots+\frac{z^n}{n!}$
21.162	$\frac{p}{(p+a)^n}$	$\frac{t^{n-1}}{(n-1)!}e^{-at}$
21.163	$\left(\frac{p}{p+1}\right)^{n+1}\frac{1}{(p+1)^a}$	$\frac{n!}{\Gamma(n+a+1)}e^{-t}t^a L_n^a(t),$ $\operatorname{Re} a>-1$
21.164	$\frac{\alpha_1 p^n+\alpha_2 p^{n-1}+\ldots+\alpha_n p}{(p+a)^n}$	$\left\{\alpha_1+\left[\alpha_2-\binom{n-1}{1}\alpha_1 a\right]t+\right.$ $+\left[\alpha_3-\binom{n-2}{1}\alpha_2 a+\right.$ $\left.+\binom{n-1}{2}\alpha_1 a^2\right]\frac{t^2}{2!}+$ $+\left[\alpha_4-\binom{n-3}{1}\alpha_3 a+\right.$ $\left.+\binom{n-2}{2}\alpha_2 a^2-\binom{n-1}{3}\alpha_1 a^3\right]\times$ $\times\frac{t^3}{3!}+\ldots+[\alpha_n-\alpha_{n-1}a+\ldots$ $\left.\ldots+\alpha_1(-a)^{n-1}]\frac{t^{n-1}}{(n-1)!}\right\}e^{-at}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
21.165	$\left[1-\frac{a^n}{(p+a)^n}\right]$	$\frac{1}{(n-1)!}\,Q\,(at,\,n)$
21.166	$2p\,(1-p)^n\,(1+p)^{-n-2}$	$k_{2n+2}(t)$
21.167	$(2-p)^{n-1}p^{m-n}$	$\frac{t^{-\frac{m}{2}}e^t\,W_{n-\frac{m}{2},\,\frac{1-m}{2}}(2t)}{2^{1-\frac{m}{2}}\,\Gamma\,(1+n-m)}$
21.168	$\frac{p\left(\frac{1}{2}-p\right)^n}{\left(\frac{1}{2}+p\right)^{m+n+1}}$	$n!\,e^{-\frac{t}{2}}t^mT_m^n(t)$
21.169	$\frac{p^{n+1}}{(p+1)^{n+1}}$	$e^{-t}L_n(t)$
21.170	$\frac{p\,(p-a)^n}{(p+a)^{n+1}}$	$e^{-at}L_n(2at)$
21.171	$\left[1-\frac{a^n}{(p+a)^n}\right]$	$\frac{1}{(n-1)!}\,\Gamma\,(n,\,at)$
21.172	$\frac{1}{(ap+1)\ldots(ap+n)}$	$\frac{1}{n!}\left(1-e^{-\frac{t}{a}}\right)^n$
21.173	$\frac{1}{(p^2+a^2)\,(p^2+4a^2)\ldots(p^2+n^2a^2)}$	$\frac{4^n\sin^{2n}\frac{at}{2}}{(2n)!\,a^{2n}}$
21.174	$\frac{1}{(p^2-a^2)\,(p^2-4a^2)\ldots(p^2-n^2a^2)}$	$\frac{4^n\,\mathrm{sh}^{2n}\frac{at}{2}}{(2n)!\,a^{2n}}$
21.175	$\frac{(2n+1)!\,a^{2n+1}p}{(p^2+a^2)(p^2+3^2a^2)\ldots[p^2+(2n+1)^2a^2]}$	$\sin^{2n+1}(at)$
21.176	$\frac{(2n)!\,a^{2n}}{(p^2+2^2a^2)\,(p^2+4^2a^2)\,\ldots\,(p^2+4n^2a^2)}$	$\sin^{2n}(at)$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
21.177	$\dfrac{(2n+1)!\,a^{2n+1}p}{(p^2-a^2)(p^2-3^2a^2)\ldots[p^2-(2n+1)^2a^2]}$	$\operatorname{sh}^{2n+1}(at)$
21.178	$\dfrac{(2n)!\,a^{2n}}{(p^2-2^2a^2)(p^2-4^2a^2)\ldots(p^2-4n^2a^2)}$	$\operatorname{sh}^{2n}(at)$
21.179	$\dfrac{p^2(p^2+2^2a^2)(p^2+4^2a^2)\ldots[p^2+(2n)^2a^2]}{(p^2+a^2)(p^2+3^2a^2)\ldots[p^2+(2n+1)^2a^2]}$	$P_{2n+1}[\cos(at)]$
21.180	$\dfrac{(p^2+a^2)(p^2+3^2a^2)\ldots[p^2+(2n-1)^2a^2]}{(p^2+2^2a^2)(p^2+4^2a^2)\ldots[p^2+(2n)^2a^2]}$	$P_{2n}[\cos(at)]$
21.181	$\dfrac{Q(p)}{P(p)}$ $P(p)=(p-a_1)(p-a_2)\ldots(p-a_n)$ $Q(p)$ — полином степени $\leqslant n$ $a_i\neq a_k$ при $i\neq k$	$\sum\limits_{m=1}^{n}\dfrac{Q(a_m)}{P_m(a_m)}e^{a_mt}$, $P_m(p)=\dfrac{P(p)}{p-a_m}$
21.182	$\dfrac{Q(p)}{P(p)}$ $P(p)=(p-a_1)^{m_1}\ldots(p-a_n)^{m_n}$ $Q(p)$ — полином степени $<m_1+\ldots+m_n$, $a_i\neq a_k$ при $i\neq k$	$\sum\limits_{k=1}^{n}\sum\limits_{l=1}^{m_k}\dfrac{\Phi_{kl}(a_k)}{(m_k-l)!\,(l-1)!}t^{m_k-l}e^{a_kt}$, $\Phi_{kl}(p)=\dfrac{d^{l-1}}{dp^{l-1}}\left[\dfrac{Q(p)}{P_k(p)}\right]$ $P_k(p)=\dfrac{P(p)}{(p-a_k)^{m_k}}$
21.183	$\dfrac{Q(p)+p\eta(p)}{P(p)}$ $pP(p)=(p^2+a_1^2)\ldots(p^2+a_n^2)$ $Q(p)$, $\eta(p)$ — четные полиномы степени $\leqslant 2n-2$ $a_i\neq a_k$ при $i\neq k$	$\sum\limits_{m=1}^{n}\dfrac{1}{P_m(ia_m)}[\eta(ia_m)\cos(a_mt)+$ $+(a_m)^{-1}Q(ia_m)\sin(a_mt)]$, $P_m(p)=\dfrac{P(p)}{p^2+a_m^2}$

§ 22. Иррациональные функции

22.1	$\sqrt{p}$	$\dfrac{1}{\sqrt{\pi t}}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
22.2	$\dfrac{\sqrt{p}}{p^n}$	$\dfrac{1}{\sqrt{\pi t}}\cdot\dfrac{2^n t^n}{1\cdot 3\cdot 5\cdots(2n-1)}$
22.3	$\left(\dfrac{1}{p}-1\right)^n\sqrt{p}$	$\dfrac{1}{\sqrt{\pi t}}\cdot\dfrac{n!}{(2n)!}\,\mathrm{He}^*_{2n}(\sqrt{t})=$ $=\dfrac{1}{\sqrt{\pi t}}\cdot\dfrac{(2n)!}{2^n\,n!}\,\mathrm{He}_{2n}(\sqrt{2t})$
22.4	$\dfrac{\sqrt{p}}{p-1}$	$e^t\,\mathrm{erf}\,\sqrt{t}$
22.5	$\dfrac{\sqrt{p}}{p+a}$	$\dfrac{e^{-at}\,\mathrm{erf}\,(i\sqrt{at})}{i\sqrt{a}}$
22.6	$\dfrac{1}{\sqrt{p}}$	$2\sqrt{\dfrac{t}{\pi}}$
22.7	$\dfrac{\sqrt{p}}{p-a}$	$\dfrac{1}{\sqrt{a}}\,e^{at}\,\mathrm{erf}\,(\sqrt{at})$
22.8	$\dfrac{1}{\sqrt{p}\,(p-a)}$	$a^{-\frac{3}{2}}\,e^{at}\,\mathrm{erf}\,(\sqrt{at})-\dfrac{2\sqrt{t}}{a\sqrt{\pi}}$
22.9	$\dfrac{\left(\dfrac{1}{p}-1\right)^n}{\sqrt{p}}\ (n\geqslant 0)$	$\dfrac{2^n n!\,e^{\frac{t}{2}}\,D_{2n+1}(\sqrt{2t})}{(2n+1)!\sqrt{\dfrac{\pi}{2}}}$
22.10	$\dfrac{2\pi i\,(p-1)^n\sqrt{p}}{(p+1)^{n+1}}$	$n!\,[D^2_{-n-1}(-i\sqrt{2t})-$ $-D^2_{-n-1}(i\sqrt{2t})]$
22.11	$\dfrac{1}{\sqrt{p}+a}$	$\dfrac{1}{a}(1-e^{a^2t}\,\mathrm{erfc}\,a\sqrt{t})$
22.12	$\dfrac{p}{\sqrt{p}+a}$	$\dfrac{1}{\sqrt{\pi t}}-ae^{a^2t}\,\mathrm{erfc}\,a\sqrt{t}$
22.13	$\dfrac{p\sqrt{p}}{(\sqrt{p}+\sqrt{a})(p-b)}$	$\dfrac{a}{a-b}\,e^{at}\,\mathrm{erfc}\,(\sqrt{at})+$ $+\dfrac{\sqrt{ab}}{a-b}\,e^{bt}\,\mathrm{erfc}\,(\sqrt{bt})-\dfrac{b}{a-b}\,e^{bt}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
22.14	$\dfrac{1}{(\sqrt{p}+a)^2}$	$\dfrac{1}{a^2}+\left(2t-\dfrac{1}{a^2}\right)e^{a^2t}\operatorname{erfc}(a\sqrt{t})-$ $-\dfrac{2}{a}\sqrt{\dfrac{t}{\pi}}$
22.15	$\dfrac{p}{(p+a)^{n+\frac{1}{2}}}$	$\dfrac{1}{\sqrt{\pi}}\dfrac{t^{n-\frac{1}{2}}e^{-at}}{\frac{1}{2}\cdot\frac{3}{2}\cdots\left(n-\frac{1}{2}\right)}$
22.16	$\dfrac{1}{(\sqrt{p}+a)^3}$	$\dfrac{1}{a^3}-\left(2at^2-\dfrac{t}{a}+\dfrac{1}{a^3}\right)\times$ $\times e^{a^2t}\operatorname{erfc}(a\sqrt{t})+2\left(t-\dfrac{1}{a^2}\right)\sqrt{\dfrac{t}{\pi}}$
22.17	$\dfrac{p}{(\sqrt{p}+a)^3}$	$2(a^2t+1)\sqrt{\dfrac{t}{\pi}}-$ $-at\,e^{a^2t}(2a^2t+3)\operatorname{erfc}(a\sqrt{t})$
22.18	$\dfrac{p\sqrt{p}}{(\sqrt{p}+a)^3}$	$(2a^4t^2+5a^2t+1)e^{a^2t}\operatorname{erfc}(a\sqrt{t})-$ $-2a(a^2t+2)\sqrt{\dfrac{t}{\pi}}$
22.19	$\dfrac{\sqrt{p}}{(\sqrt{p}+a)^3}$	$(2at^2+1)\,t\,e^{a^2t}\operatorname{erfc}(a\sqrt{t})-$ $-2at\sqrt{\dfrac{t}{\pi}}$
22.20	$\dfrac{p}{(\sqrt{p}+a)^4}$	$-\dfrac{2}{3}a^3t^2(2a^2t+5)\sqrt{\dfrac{t}{\pi}}+$ $+t\left(\dfrac{4}{3}a^4t^2+4a^2t+1\right)\times$ $\times e^{a^2t}\operatorname{erfc}(a\sqrt{t})$
22.21	$\dfrac{\sqrt{p}}{\sqrt{p}+a}$	$e^{a^2t}\operatorname{erfc}(a\sqrt{t})$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
22.22	$\dfrac{\sqrt{p}+a}{\sqrt{p}}$	$\dfrac{2}{a}\sqrt{\dfrac{t}{\pi}}+\dfrac{1}{a^2}e^{a^2t}\operatorname{erfc}(a\sqrt{t})-\dfrac{1}{a^2}$
22.23	$\dfrac{\sqrt{p}}{(\sqrt{p}+\sqrt{a})(p-b)}$	$\dfrac{1}{a-b}e^{at}\operatorname{erfc}(\sqrt{at})+$ $+\dfrac{\sqrt{a}}{(a-b)\sqrt{b}}e^{bt}\operatorname{erf}(\sqrt{bt})-$ $-\dfrac{1}{a-b}e^{bt}$
22.24	$\dfrac{p}{(\sqrt{p}+\sqrt{a})^2}$	$1-2\sqrt{\dfrac{at}{\pi}}+$ $+(1-2at)e^{at}\left[\operatorname{erf}(\sqrt{at})-1\right]$
22.25	$\dfrac{1}{(\sqrt{p}+\sqrt{a})^2}$	$\dfrac{1}{a}+\left(2t-\dfrac{1}{a}\right)e^{at}\operatorname{erfc}(\sqrt{at})-$ $-2\sqrt{\dfrac{t}{\pi a}}$
22.26	$\dfrac{\sqrt{p}}{(\sqrt{p}+a)^2}$	$2\sqrt{\dfrac{t}{\pi}}-2at\,e^{a^2t}\operatorname{erfc}(a\sqrt{t})$
22.27	$\dfrac{\sqrt{p}-a}{\sqrt{p}+a}$	$2e^{a^2t}\operatorname{erfc}(a\sqrt{t})-1$
22.28	$\dfrac{(\sqrt{p}-a)^2}{(\sqrt{p}+a)^2}$	$1+8a^2t\,e^{a^2t}\operatorname{erfc}(a\sqrt{t})-8a\sqrt{\dfrac{t}{\pi}}$
22.29	$\dfrac{(\sqrt{p}-a)^3}{(\sqrt{p}+a)^3}$	$2(8a^4t^2+8a^2t+1)e^{a^2t}\operatorname{erfc}(a\sqrt{t})-$ $-8a\sqrt{\dfrac{t}{\pi}}(2a^2t+1)-1$
22.30	$p[\sqrt{p-a}-\sqrt{p-b}]$	$\dfrac{e^{bt}-e^{at}}{2t\sqrt{\pi t}}$
22.31	$\dfrac{p}{\sqrt{p+a}}$	$\dfrac{e^{-at}}{\sqrt{\pi t}}$

№	$\overline{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
22.32	$\dfrac{p\sqrt{p+a}}{p+b}$	$\dfrac{e^{-at}}{\sqrt{\pi t}}+\sqrt{a-b}\,e^{-bt}\operatorname{erf}\left[\sqrt{(a-b)t}\right]$
22.33	$\dfrac{p}{(p+a)\sqrt{p+b}}$	$\dfrac{1}{\sqrt{b-a}}e^{-at}\operatorname{erf}\sqrt{(b-a)t}$
22.34	$\dfrac{\sqrt{p}}{(1+\sqrt{p})^n}$	$\dfrac{\sqrt{2}}{\pi}(2t)^{\frac{1}{2}(n-1)}e^{\frac{t}{2}}D_{-n}(\sqrt{2}t)$
22.35	$\dfrac{\sqrt{p}}{(p+a)(1+\sqrt{b^3p})}$	$\dfrac{1}{1+ab^3}\left[\dfrac{e^{-at}}{i\sqrt{a}}\operatorname{erf}(i\sqrt{at})-\right.$ $-\sqrt{b^3}e^{-at}+$ $\left.+\sqrt{b^3}\exp\left(\dfrac{t}{b^3}\right)\operatorname{erfc}\left(\sqrt{\dfrac{t}{b^3}}\right)\right]$
22.36	$\dfrac{p}{(p+a)(1+\sqrt{b^3p})}$	$\dfrac{1}{1+ab^3}\left[e^{-at}-i\sqrt{ab^3}e^{-at}\times\right.$ $\times\operatorname{erf}(i\sqrt{at})-\exp\left(\dfrac{t}{b^3}\right)\times$ $\left.\times\operatorname{erfc}\left(\sqrt{\dfrac{t}{b^3}}\right)\right]$
22.37	$\dfrac{p^2}{(p+a)(1+\sqrt{b^3p})}$	$\dfrac{1}{1+ab^3}\left[i\sqrt{(ab)^3}e^{-at}\operatorname{erf}(i\sqrt{at})-\right.$ $-ae^{-at}-\dfrac{1}{b^3}\exp\left(\dfrac{t}{b^3}\right)\times$ $\left.\times\operatorname{erfc}\left(\sqrt{\dfrac{t}{b^3}}\right)\right]+\dfrac{1}{\sqrt{\pi b^3t}}$
22.38	$\dfrac{p\sqrt{p}}{(p+a)(1+\sqrt{b^3p})}$	$\dfrac{1}{1+ab^3}\left[i\sqrt{a}\,e^{-at}\operatorname{erf}(i\sqrt{at})+\right.$ $+\sqrt{b^3}\,a\,e^{-at}+$ $\left.+\dfrac{1}{\sqrt{b^3}}\exp\left(\dfrac{t}{b^3}\right)\operatorname{erfc}\left(\sqrt{\dfrac{t}{b^3}}\right)\right]$
22.39	$\sqrt{p+\alpha}$	$\dfrac{e^{-\alpha t}}{\sqrt{\pi t}}+\sqrt{\alpha}\operatorname{erf}\sqrt{\alpha t}$
22.40	$\dfrac{p\sqrt{p+a}}{(p+a)^{n+1}}$	$\dfrac{2^n e^{-at}t^n}{1\cdot3\cdot5\ldots(2n-1)\sqrt{\pi t}}$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
22.41	$\dfrac{1}{\sqrt{p+a}}$	$\dfrac{1}{\sqrt{a}}\operatorname{erf}\sqrt{at}$
22.42	$\dfrac{p}{(p+a)^2\sqrt{p+a}}$	$\dfrac{4\sqrt{t^3}\,e^{-at}}{3\sqrt{\pi}}$
22.43	$\dfrac{p^2}{(p+a)\sqrt{p+a}}$	$\dfrac{e^{-at}(1-2at)}{\sqrt{\pi t}}$
22.44	$\dfrac{p(p+\alpha)}{(p+a)\sqrt{p+a}}$	$\dfrac{e^{-at}[1+2(\alpha-a)t]}{\sqrt{\pi t}}$
22.45	$\dfrac{p}{(p+a)(p+b)\sqrt{p+a}}$	$\dfrac{1}{\sqrt{(a-b)^3}}e^{-bt}\operatorname{erf}\sqrt{(a-b)t}-$ $-\dfrac{2\sqrt{t}}{\sqrt{\pi}(a-b)}e^{-at}$
22.46	$\dfrac{p}{\sqrt{p+a}}\left(\dfrac{a-p}{a+p}\right)^n$	$\dfrac{D_{2n}(2\sqrt{at})}{2^n\,\Gamma\left(n+\frac{1}{2}\right)\sqrt{t}}$
22.47	$\dfrac{p(a-p)^n}{(a+p)^{n+1}\sqrt{p+a}}$	$\dfrac{2^n\,n!\,D_{2n+1}(2\sqrt{at})}{\sqrt{\pi a}\,(2n+1)!}$
22.48	$\dfrac{p}{a+\sqrt{p+b}}$	$e^{-bt}\left[\dfrac{1}{\sqrt{\pi t}}-\right.$ $\left.-a\exp(a^2t)\operatorname{erfc}(a\sqrt{t})\right]$
22.49	$\dfrac{p}{(p+b)(a+\sqrt{p+b})}$	$\dfrac{e^{-bt}}{a}\left[1-\exp(a^2t)\operatorname{erfc}(a\sqrt{t})\right]$
22.50	$\dfrac{p(p+b)}{(p+c)(a+\sqrt{p+b})}$	$\dfrac{(b-c)e^{-ct}}{a^2+c-b}\{a-$ $-\sqrt{b-c}\operatorname{erf}[\sqrt{(b-c)t}]\}+$ $+e^{-bt}\left[\dfrac{1}{\sqrt{\pi t}}-\right.$ $\left.-\dfrac{a^3\exp(a^2t)\operatorname{erfc}(a\sqrt{t})}{a^2+c-b}\right]$

№	$\bar{f}(p) = p\int\limits_0^\infty e^{-pt} f(t)\,dt$	$f(t)$
22.51	$\dfrac{p}{(p+c)(a+\sqrt{p+b})}$	$\dfrac{1}{a^2+c-b}\{ae^{-ct}-\sqrt{b-c}\,e^{-ct}\operatorname{erf}[\sqrt{(b-c)t}]-a\exp(a^2t-bt)\operatorname{erfc}(a\sqrt{t})\}$
22.52	$\dfrac{p}{p+b+a\sqrt{p+b}}$	$\exp(a^2t-bt)\operatorname{erfc}(a\sqrt{t})$
22.53	$\dfrac{p}{(p+b)(p+b+a\sqrt{p+b})}$	$\dfrac{e^{-bt}}{a^2}\left[\exp(a^2t)\operatorname{erfc}(a\sqrt{t})-1+\dfrac{2a\sqrt{t}}{\sqrt{\pi}}\right]$
22.54	$\dfrac{p}{(p+c)(p+b+a\sqrt{p+b})}$	$\dfrac{1}{a^2+c-b}\left\{\dfrac{ae^{-ct}}{\sqrt{b-c}}\operatorname{erf}\sqrt{(b-c)t}-e^{-ct}+\exp(c^2t-bt)\operatorname{erfc}(a\sqrt{t})\right\}$
22.55	$\dfrac{p(p+b)}{(p+c)(p+b+a\sqrt{p+b})}$	$\dfrac{1}{a^2+c-b}\{a\sqrt{b-c}\,e^{-ct}\times\operatorname{erf}(\sqrt{(b-c)t})-(b-c)e^{-ct}+a^2\exp(a^2t-bt)\operatorname{erfc}(a\sqrt{t})\}$
23.56	$\dfrac{p}{\sqrt{p^2+a^2}}$	$J_0(at)$
22.57	$\dfrac{p}{\sqrt{p-a}}[\sqrt{p+a}-\sqrt{p-a}]$	$a[I_0(at)+I_1(at)]$
22.58	$\dfrac{p\sqrt{p+a+b}}{(p+a-b)\sqrt{p+a-b}}$	$e^{-at}([1+2bt)I_0(bt)+2bt\,I_1(bt)]$
22.59	$\dfrac{p}{(p+a-b)\sqrt{(p+a)^2-b^2}}$	$te^{-at}[I_0(bt)+I_1(bt)]$
22.60	$\dfrac{\sqrt{p+a-b}}{\sqrt{p+a+b}}$	$e^{-at}I_0(bt)+(a-b)\int\limits_0^t e^{-au}I_0(bu)\,du$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
22.61	$\dfrac{p\left[\sqrt{p+a}-\sqrt{p-a}\right]}{\sqrt{p+a}+\sqrt{p-a}}$	$\dfrac{I_1(at)}{t}$
22.62	$\dfrac{p}{\sqrt{p^2+ap+b}}$	$e^{-\frac{at}{2}}J_0\left(\sqrt{b-\frac{a^2}{4}}\,t\right)$
22.63	$\dfrac{1}{\sqrt{(p^2+a^2)^3}}$	$\dfrac{\pi}{2a^2}t\,[J_1(at)\,\mathbf{H}_0(at)-J_0(at)\,\mathbf{H}_1(at)]$
22.64	$\dfrac{p\sqrt{p+\sqrt{p^2+a^2}}}{\sqrt{p^2+a^2}}$	$\sqrt{\dfrac{2}{\pi t}}\cos(at)$
22.65	$\dfrac{p}{\sqrt{p+\sqrt{p^2+a^2}}}$	$\dfrac{1}{at\sqrt{2\pi t}}\sin(at)$
22.66	$\dfrac{p}{\sqrt{p^2+a^2}\sqrt{p+\sqrt{p^2+a^2}}}$	$\dfrac{1}{a}\sqrt{\dfrac{2}{\pi t}}\sin(at)$
22.67	$\dfrac{p(p-a)^n}{(p-b)^{n+\frac{1}{2}}}$	$\dfrac{(-2)^n n!\,e^{bt}}{(2n)!\sqrt{\pi t}}\mathrm{He}_{2n}\left(\sqrt{2(a-b)t}\right)$
22.68	$\dfrac{p(p-a)^n}{(p-b)^{n+\frac{3}{2}}}$	$\dfrac{(-2)^n n!}{(2n+1)!}\sqrt{\dfrac{2}{\pi}}e^{bt}\times$ $\times\,\mathrm{He}_{2n+1}\left(\sqrt{2(a-b)t}\right)$
22.69	$\dfrac{\sqrt{p+\sqrt{p^2+a^2}}}{\sqrt{p^2+a^2}}$	$\dfrac{2}{\sqrt{a}}C(at)$
22.70	$\dfrac{1}{\sqrt{p^2+a^2}\sqrt{p+\sqrt{p^2+a^2}}}$	$\dfrac{2}{a\sqrt{a}}S(at)$
22.71	$\dfrac{p}{(p^2+a^2)^{\frac{2n+1}{2}}}$	$\dfrac{1}{1\cdot3\cdot5\ldots(2n-1)}\left(\dfrac{t}{a}\right)^n J_n(at)$
22.72	$\dfrac{p}{(p+\sqrt{p^2+a^2})^n}$	$\dfrac{n}{a^n}\dfrac{J_n(at)}{t}$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
22.73	$\dfrac{p}{\sqrt{p^2-a^2}}$	$I_0(at)$
22.74	$\dfrac{1}{\sqrt{(p^2-a^2)^3}}$	$\dfrac{\pi}{2a^2}t\,[I_1(at)\,\mathrm{L}_0(at)-I_0(at)\,\mathrm{L}_1(at)]$
22.75	$\dfrac{p\sqrt{p+\sqrt{p^2-a^2}}}{\sqrt{p^2-a^2}}$	$\sqrt{\dfrac{2}{\pi t}}\,\mathrm{ch}\,(at)$
22.76	$\dfrac{p}{\sqrt{p^2-a^2}\sqrt{p+\sqrt{p^2-a^2}}}$	$\dfrac{1}{a}\sqrt{\dfrac{2}{\pi t}}\,\mathrm{sh}\,(at)$
22.77	$\dfrac{p}{(p^2-a^2)^{\frac{2n+1}{2}}}$	$\dfrac{t^n I_n(at)}{1\cdot 3\cdot 5\cdot\ldots(2n-1)\,a^n}$
22.78	$\dfrac{p}{(p+\sqrt{p^2-a^2})^n}$	$\dfrac{n}{a^n}\,\dfrac{I_n(at)}{t}$
22.79	$\dfrac{p\sqrt{\sqrt{p^4+a^4}+p^2}}{\sqrt{p^4+a^4}}$	$\sqrt{2}\,\mathrm{ber}\,(at)$
22.80	$\dfrac{p\sqrt{\sqrt{p^4+a^4}-p^2}}{\sqrt{p^4+a^4}}$	$\sqrt{2}\,\mathrm{bei}\,(at)$
22.81	$\dfrac{p\,(2p^2-a^2)}{(p^2+a^2)^2\,\sqrt{p^2+a^2}}$	$t^2 J_0(at)$
22.82	$\dfrac{p\,(2p^2+a^2)}{(p^2-a^2)^2\,\sqrt{p^2-a^2}}$	$t^2 I_0(at)$
22.83	$\dfrac{p}{\sqrt{p^2+ap}}$	$e^{-\frac{at}{2}}\,I_0\left(\dfrac{at}{2}\right)$
22.84	$\dfrac{p+a}{\sqrt{p^2+ap}}$	$e^{-\frac{at}{2}}\left[(1+at)\,I_0\left(\dfrac{at}{2}\right)+ at\,I_1\left(\dfrac{at}{2}\right)\right]$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
22.85	$\frac{p}{(p+a)\sqrt{p^2+ap}}$	$te^{-\frac{at}{2}}\left[I_0\left(\frac{at}{2}\right)-I_1\left(\frac{at}{2}\right)\right]$
22.86	$\frac{p^2}{(p+a)\sqrt{p^2+ap}}$	$e^{-\frac{at}{2}}\left[at\,I_1\left(\frac{at}{2}\right)+(1-at)\,I_0\left(\frac{at}{2}\right)\right]$
22.87	$\frac{p}{p+\sqrt{p^2+ap}}$	$\frac{1}{2}e^{-\frac{at}{2}}\left[I_1\left(\frac{at}{2}\right)+I_0\left(\frac{at}{2}\right)\right]$
22.88	$\frac{p}{a+2p+2\sqrt{p^2+ap}}$	$\frac{1}{at}e^{-\frac{at}{2}}I_1\left(\frac{at}{2}\right)$
22.89	$\frac{p}{p+a+\sqrt{p^2+ap}}$	$\frac{1}{2}e^{-\frac{at}{2}}\left[I_0\left(\frac{at}{2}\right)-I_1\left(\frac{at}{2}\right)\right]$
22.90	$\frac{p}{\sqrt{p^2+ap+b}}$	$e^{-\frac{at}{2}}J_0\left(\sqrt{b-\frac{a^2}{4}}\,t\right)$
22.91	$\frac{p}{\sqrt{(p+a)(p+b)}}$	$e^{-\frac{a+b}{2}t}I_0\left(\frac{a-b}{2}\right)$
22.92	$\frac{p+b}{\sqrt{(p+a)(p+b)}}$	$e^{-\frac{a+b}{2}t}I_0\left(\frac{a-b}{2}t\right)+b\int\limits_0^t e^{-\frac{a+b}{2}\tau}I_0\left(\frac{a-b}{2}\tau\right)d\tau$
22.93	$\frac{p}{(p+b)\sqrt{(p+a)(p+b)}}$	$te^{-\frac{a+b}{2}t}\left\{I_0\left(\frac{a-b}{2}t\right)+I_1\left(\frac{a-b}{2}t\right)\right\}$
22.94	$\frac{p(p+a)}{(p+b)\sqrt{(p+a)(p+b)}}$	$e^{-\frac{a+b}{2}t}\left\{(a-b)\,t\,I_1\left(\frac{a-b}{2}t\right)+[1+(a-b)t]\,I_0\left(\frac{a-b}{2}t\right)\right\}$

8 Зак. 1125

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
22.95	$\dfrac{p}{p+b+\sqrt{(p+a)(p+b)}}$	$\frac{1}{2}e^{-\frac{a+b}{2}t}\left\{I_1\left(\frac{a-b}{2}t\right)+I_0\left(\frac{a-b}{2}t\right)\right\}$
22.96	$\dfrac{p}{\frac{a+b}{2}+p+\sqrt{(p+a)(p+b)}}$	$\dfrac{2e^{-\frac{a+b}{2}t}}{(a-b)t}I_1\left(\frac{a-b}{2}t\right)$
22.97	$\dfrac{p}{\sqrt{p^3+a^3}}$	$\frac{2}{3}\sqrt{\pi t}\,J^{(2)}_{\frac{1}{6},-\frac{1}{6}}(at)$
22.98	$\dfrac{p^2}{\sqrt{p^3+a^3}}$	$\frac{2a}{3}\sqrt{\pi t}\,J^{(2)}_{-\frac{1}{6},-\frac{5}{6}}(at)$
22.99	$\dfrac{p^3}{\sqrt{p^3+a^3}}$	$\frac{2a^2}{3}\sqrt{\pi t}\,J^{(2)}_{-\frac{5}{6},-\frac{7}{6}}(at)$
22.100	$\dfrac{p}{\sqrt{p^4-a^4}}$	$\int_0^t J_0(a\xi)\,I_0[a(t-\xi)]\,d\xi$
22.101	$\dfrac{p}{\sqrt[3]{p^3+a^3}}$	$\Gamma\left(\frac{2}{3}\right)\sqrt[3]{\frac{at}{3}}\,J^{(2)}_{0,-\frac{1}{3}}(at)$
22.102	$p\sqrt{\sqrt{p^2+a^2}-p}$	$\dfrac{\sin\lvert a\rvert t}{t\sqrt{2\pi t}}$
22.103	$\dfrac{1}{\sqrt{p^2+a^2}\sqrt{\sqrt{p^2+a^2}-p}}$	$\dfrac{2}{a\sqrt{a}}C(at)$
22.104	$\dfrac{\sqrt{\sqrt{p^2+1}-p}}{p\sqrt{p^2-1}}\times\left(\dfrac{p}{2\sqrt{p^2+1}}+\dfrac{p^2}{p^2+1}+1\right)$	$2t\,S(t)$
22.105	$\dfrac{\sqrt{\sqrt{p^2+4}+p}}{\sqrt{p}\,\sqrt{p^2+4}}$	$\sqrt{2}\,J_c(1,t)$

№	$\bar f(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
22.106	$\dfrac{\sqrt{\sqrt{p^2+4}-p}}{\sqrt{p}\,\sqrt{p^2+4}}$	$-\sqrt{2}\,J_s(1,\,t)$
22.107	$\dfrac{\sqrt{\sqrt{(p^2+a^2-1)^2+4p^2}+p^2+a^2-1}}{\sqrt{(p^2+a^2-1)^2+4p^2}}$	$\sqrt{2}\,J_c(a,\,t)$
22.108	$\dfrac{\sqrt{\sqrt{(p^2+a^2-1)^2+4p^2}-(p^2+a^2-1)}}{\sqrt{(p^2+a^2-1)^2+4p^2}}$	$-\sqrt{2}\,J_s(a,\,t)$
22.109	$\dfrac{p\left(\sqrt{p^2+a^2}-p\right)^{n+\frac{1}{2}}}{\sqrt{p^2+a^2}}$	$a^{n+\frac{1}{2}}J_{n+\frac{1}{2}}(at)$
22.110	$\dfrac{p\,(p^2+a^2)^{\frac{m-1}{2}}}{\left(p+\sqrt{p^2+a^2}\right)^n}$	$2^{-m}a^{m-n}J_n^m(at),\quad n>m-1$
22.111	$\dfrac{1}{p^\nu}$	$\dfrac{t^\nu}{\Gamma(\nu+1)},\quad \mathrm{Re}\,\nu>-1$
22.112	$\dfrac{p}{(p+a)^\nu}$	$\dfrac{1}{\Gamma(\nu)}t^{\nu-1}e^{-at},\qquad \mathrm{Re}\,\nu>0$
22.113	$\dfrac{1}{p^{\nu-1}(p-a)}$	$\sum\limits_{n=0}^{\infty}\dfrac{(-1)^n n!\,t^\nu L_n^\nu(2at)}{2^{\nu-1}\Gamma(\nu+n+1)},\ \mathrm{Re}\,\nu>-1$
22.114	$\dfrac{p}{p^{\nu-1}(2p^2-2bp+b^2)}$	$t^\nu\sum\limits_{n=0}^{\infty}\dfrac{(-1)^n(2n)!\,L_{2n}^\nu(2bt)}{\Gamma(2n+\nu+1)}$ $\mathrm{Re}\,\nu>-1$
22.115	$\dfrac{p}{(p+1)^{\nu-1}(p^2+1)}$	$2e^{-t}t^\nu\sum\limits_{n=0}^{\infty}\dfrac{(-1)^n(2n)!\,L_{2n}(2t)}{\Gamma(2n+\nu+1)}$ $\mathrm{Re}\,\nu>-1$
22.116	$\dfrac{1}{p^{\nu-1}\left(p-\frac{1}{2}\right)}$	$2\sum\limits_{n=0}^{\infty}\dfrac{(-1)^n n!\,t^\nu L_n^\nu(t)}{\Gamma(\nu+n+1)},\ \mathrm{Re}\,\nu>-1$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
22.117	$\frac{(p-1)^n}{p^{n+\nu}}$	$\frac{n!\,t^\nu L_n^\nu(t)}{\Gamma(n+\nu+1)}=(-1)^n n!\,T_\nu^n(t)$ $\operatorname{Re}\nu>-1$
22.118	$\frac{(p-a)^n}{p^{n+2\nu}}$	$\frac{t^{\nu-\frac{1}{2}}e^{\frac{at}{2}}}{a^{\nu+\frac{1}{2}}\Gamma(2\nu+1)}M_{n+\nu+\frac{1}{2},\,\nu}(at)$ $\operatorname{Re}\nu>-\frac{1}{2}$
22.119	$\frac{p}{(p+a)(p+b)^{\nu-1}}$	$\frac{e^{-at}}{\Gamma(\nu-1)(b-a)^{\nu-1}}\gamma[\nu-1,(b-a)t]$
22.120	$\left(\frac{p}{p+a}\right)^{n+1}\frac{1}{(p+a)^\nu}$	$e^{-at}t^\nu L_n^\nu(at),\quad \operatorname{Re}\nu>-1$
22.121	$\frac{p(p-a)^n}{(p-b)^{\nu+1}}$	$\frac{n!}{\Gamma(\nu+1)}t^{\nu-n}e^{bt}L_n^{\nu-n}[(b-a)t]$ $\operatorname{Re}\nu>n-1$
22.122	$\left(\frac{p}{p-a}\right)^\nu$	${}_1F_1(\nu;\,1;\,at)$
22.123	$\frac{p^\nu}{(p+a)^{\nu-\frac{1}{2}}}$	$\frac{e^{-\frac{at}{2}}}{\sqrt[4]{\pi^2at^3}}M_{\nu-\frac{3}{4},\,-\frac{1}{4}}(at)$
22.124	$\frac{p^\nu}{(p+a)^{\nu+\frac{1}{2}}}$	$\frac{2e^{-\frac{at}{2}}}{\sqrt[4]{\pi^2a^3t}}M_{\nu-\frac{1}{4},\,\frac{1}{4}}(at)$
22.125	$\frac{p^{1-\nu}}{(p+a)^\nu}$	$\frac{\sqrt{\pi}}{\Gamma(\nu)}\left(\frac{t}{a}\right)^{\nu-\frac{1}{2}}e^{-\frac{at}{2}}I_{\nu-\frac{1}{2}}\left(\frac{at}{2}\right)$
22.126	$\frac{p^\nu}{(p+a)^{n+\nu-1}}$	$\frac{t^{\frac{n}{2}-1}e^{-\frac{at}{2}}}{\Gamma(n)\,a^{\frac{n}{2}}}M_{\frac{n}{2}+\nu-1,\,\frac{n-1}{2}}(at),\ n>0$

№	$\overline{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
22.127	$\frac{p}{(p+a)^{\nu-1}}-\frac{p}{(p+b)^{\nu-1}}$	$\frac{t^{\nu-2}(e^{-at}-e^{-bt})}{\Gamma(\nu-1)}$, $\operatorname{Re}\nu>0$
22.128	$\frac{p}{(\sqrt{p+a}+\sqrt{p+b})^{\nu}}$	$\frac{\nu e^{-\frac{a+b}{2}t}I_{\frac{\nu}{2}}\left(\frac{a-b}{2}t\right)}{2(a-b)^{\frac{\nu}{2}}t}$, $\operatorname{Re}\nu>0$
22.129	$\sqrt{\frac{p}{p+a}}\frac{p}{(\sqrt{p+a}+\sqrt{p})^{2\nu}}$	$\frac{1}{4a^{\nu-1}}e^{-\frac{at}{2}}\left[I_{\nu-1}\left(\frac{at}{2}\right)-2I_{\nu}\left(\frac{at}{2}\right)+I_{\nu+1}\left(\frac{at}{2}\right)\right]$, $\operatorname{Re}\nu>0$
22.130	$\sqrt{\frac{p+a}{p+b}}\frac{p}{(\sqrt{p+a}+\sqrt{p+b})^{2\nu}}$	$\frac{1}{4(a-b)^{\nu-1}}e^{-\frac{a+b}{2}t}\times\left\{I_{\nu-1}\left(\frac{a-b}{2}t\right)+2I_{\nu}\left(\frac{a-b}{2}t\right)+I_{\nu+1}\left(\frac{a-b}{2}t\right)\right\}$, $\operatorname{Re}\nu>0$
22.131	$p\left(\frac{\sqrt{p+a}-\sqrt{p}}{\sqrt{p+a}+\sqrt{p}}\right)^{\nu}$	$\frac{\nu}{t}e^{-\frac{at}{2}}I_{\nu}\left(\frac{at}{2}\right)$, $\operatorname{Re}\nu>0$
22.132	$\frac{(1-p)^{\nu}}{p^{2n+\nu}}$	$\frac{t^{n-\frac{1}{2}}e^{\frac{t}{2}}}{\Gamma(2n+\nu+1)}W_{n+\nu+\frac{1}{2},\,n}(t)$, $\operatorname{Re}\nu>-\frac{1}{2}$
22.133	$\frac{(1-p)^{\nu-n}}{p^{\nu+n}}$	$\frac{t^{-\frac{\nu+1}{2}}e^{\frac{t}{2}}}{\Gamma(n+1)(-1)^{n+\nu}}W_{\frac{\nu}{2}+\frac{1}{2}+n,\,\frac{\nu}{2}}(t)$
22.134	$\frac{(1-p)^{\nu+n-\frac{1}{2}}}{p^{n-\nu+\frac{1}{2}}}$	$\frac{t^{-\nu-\frac{1}{2}}e^{\frac{t}{2}}}{\Gamma\left(n-\nu+\frac{1}{2}\right)}W_{n,\nu}(t)$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
22.135	$(pa)^{\nu+n-\frac{1}{2}}[a(p+1)]^{\nu-n-\frac{1}{2}}$	$\dfrac{\left(\frac{t}{a}\right)^{-\nu-\frac{1}{2}}e^{-\frac{t}{2}}}{(-1)^{\nu+n+\frac{1}{2}}\Gamma\left(n-\nu+\frac{1}{2}\right)}\times$ $\times W_{n,\nu}\left(\frac{t}{a}\right)$
22.136	$\dfrac{p^{\nu-n+\frac{1}{2}}}{(p+1)^{\nu+n+\frac{1}{2}}}$	$\dfrac{t^{n-\frac{1}{2}}e^{-\frac{t}{2}}}{\Gamma(2n+1)}M_{\nu,n}(t)=$ $=\dfrac{t^{2n}e^{-t}}{\Gamma(2n+1)}\,{}_1F_1\left(n-\nu+\frac{1}{2};\ 2n+1;\ t\right)$
22.137	$\dfrac{p^{n-\nu+k-m+\frac{3}{2}}}{(p+1)^{n+\nu+k+m-\frac{1}{2}}}$	$\dfrac{e^{-\frac{t}{2}}t^{\nu+m-\frac{3}{2}}}{\Gamma(2m+2\nu-1)}M_{n+k,\nu+m-1}(t)$ $\operatorname{Re}\left(\nu+m-\frac{1}{2}\right)>0$
22.138	$\dfrac{[1+(a-1)p]^n}{p^{\nu-\mu-1}(1+ap)^{n+\mu-1}}$	$\dfrac{n!\,t^{\frac{\nu}{2}}}{\Gamma(n+\mu+1)}\int\limits_0^\infty e^{-a\tau}J_\nu(2\sqrt{t\tau})\times$ $\times L_n^{(\mu)}(\tau)\,\tau^{\mu-\frac{\nu}{2}}d\tau,\quad \operatorname{Re}\nu>-1$ $\operatorname{Re}\mu>-1$
22.139	$\dfrac{p(p-a)^{\nu-n-\frac{1}{2}}}{(p+a)^{\nu+n+\frac{1}{2}}}$	$\dfrac{1}{(2a)^{2n}}Y_{\nu,n}(2at)$
22.140	$\dfrac{p(a-p)^\nu}{(a+p)^{\nu+2n+1}}$	$\dfrac{t^{n-\frac{1}{2}}W_{\nu+n+\frac{1}{2},\,n}(2at)}{\Gamma(\nu+2n+1)(2a)^{n+\frac{1}{2}}}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
22.141	$\dfrac{p\left(\sqrt{p+a}+\sqrt{p+b}\right)^{2-2\nu}}{\sqrt{(p+a)(p+b)}}$	$(a-b)^{1-\nu}e^{-\frac{a+b}{2}t}I_{\nu-1}\left(\dfrac{a-b}{2}t\right)$
22.142	$\dfrac{p}{(p+a)^{\frac{1}{4}+\nu}(p+b)^{\frac{1}{4}-\nu}}$	$\dfrac{e^{-\frac{a+b}{2}t}}{\sqrt{\pi}\sqrt[4]{(a-b)t^3}}M_{\nu,-\frac{1}{4}}[(a-b)t]$
22.143	$\dfrac{p}{(p+a)^{\frac{3}{4}+\nu}(p+b)^{\frac{3}{4}-\nu}}$	$\dfrac{2e^{-\frac{a+b}{2}t}}{\sqrt{\pi}\sqrt[4]{(a-b)^3 t}}M_{\nu,\frac{1}{4}}[(a-b)t]$
22.144	$\dfrac{p}{(p+a)^{\nu+n}(p+b)^{\nu-n}}$	$\dfrac{t^{\nu-1}e^{-\frac{a+b}{2}t}}{\Gamma(2\nu)(a-b)^{\nu}}M_{n,\nu-\frac{1}{2}}[(a-b)t]$
22.145	$\dfrac{p}{(p+a)^{\nu}(p+b)^{\nu}}$	$\dfrac{\sqrt{\pi}}{\Gamma(\nu)}\left(\dfrac{t}{a-b}\right)^{\nu-\frac{1}{2}}e^{-\frac{a+b}{2}t}\times$ $\times I_{\nu-\frac{1}{2}}\left(\dfrac{a-b}{2}t\right),\quad \operatorname{Re}\nu>-\dfrac{1}{2}$
22.146	$\dfrac{p}{(p-a)^{\nu}(p-b)^{\mu}}$	$\dfrac{t^{\mu+\nu-1}e^{bt}}{\Gamma(\nu+\mu)}\,{}_1F_1(\nu;\ \nu+\mu;\ (a-b)t)$ $\operatorname{Re}\mu>0,\quad \operatorname{Re}\nu>0$
22.147	$\dfrac{1}{(p^2+a^2)^{\nu+\frac{1}{2}}}$	$\dfrac{\pi t}{2a^{2\nu}}[J_{\nu}(at)\,\mathbf{H}'_{\nu}(at)-$ $-J'_{\nu}(at)\,\mathbf{H}_{\nu}(at)],\quad \operatorname{Re}\nu>-\dfrac{1}{2}$
22.148	$\dfrac{1}{(p^2-a^2)^{\nu+\frac{1}{2}}}$	$\dfrac{\pi t}{2a^{2\nu}}\Big[I_{\nu}(at)\,\mathbf{L}'_{\nu}(at)-$ $-I'_{\nu}(at)\,\mathbf{L}_{\nu}(at)\Big],\quad \operatorname{Re}\nu>-\dfrac{1}{2}$
22.149	$\dfrac{p}{(p^2+a^2)^{\nu+\frac{1}{2}}}$	$\left(\dfrac{2t}{a}\right)^{\nu}\dfrac{\Gamma(\nu+1)}{\Gamma(2\nu+1)}J_{\nu}(at)$ $\operatorname{Re}\nu>-\dfrac{1}{2}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
22.150	$p\left(p-\sqrt{p^2-ia^2}\right)^\nu$	$\nu i^{-\frac{\nu}{2}} a^\nu \frac{\mathrm{ber}_\nu at+i\,\mathrm{bei}_\nu at}{t}$, $\mathrm{Re}\,\nu>0$
22.151	$\frac{p^2}{(p^2+a^2)^{\nu+\frac{3}{2}}}$	$\frac{\sqrt{\pi}\,t^{\nu+1}J_\nu(at)}{a^\nu 2^{\nu+1}\Gamma\left(\nu+\frac{3}{2}\right)}$, $\mathrm{Re}\,\nu>-1$
22.152	$\frac{p}{(p^2-a^2)^{\nu+\frac{1}{2}}}$	$\left(\frac{2t}{a}\right)^\nu \frac{\Gamma(\nu+1)}{\Gamma(2\nu+1)} I_\nu(at)$ $\mathrm{Re}\,\nu>-\frac{1}{2}$
22.153	$\frac{p^2}{(p^2-a^2)^{\nu+\frac{3}{2}}}$	$\frac{\sqrt{\pi}\,t^{\nu+1}I_\nu(at)}{a^\nu 2^{\nu+1}\Gamma\left(\nu+\frac{3}{2}\right)}$, $\mathrm{Re}\,\nu>-1$
22.154	$\frac{p\left[(p+ia)^{\nu+1}+(p-ia)^{\nu+1}\right]}{(p^2+a^2)^{\nu+1}}$	$\frac{2t^\nu\cos at}{\Gamma(\nu+1)}$, $\mathrm{Re}\,\nu>-1$
22.155	$\frac{p\left[(p+ia)^{\nu+1}-(p-ia)^{\nu+1}\right]}{(p^2+a^2)^{\nu+1}}$	$\frac{2it^\nu\sin at}{\Gamma(\nu+1)}$, $\mathrm{Re}\,\nu>-1$
22.156	$\frac{p\left[(p+a)^{\nu+1}+(p-a)^{\nu+1}\right]}{(p^2-a^2)^{\nu+1}}$	$\frac{2t^\nu\,\mathrm{ch}\,at}{\Gamma(\nu+1)}$, $\mathrm{Re}\,\nu>-1$
22.157	$\frac{p\left[(p+a)^{\nu+1}-(p-a)^{\nu+1}\right]}{(p^2-a^2)^{\nu+1}}$	$\frac{2t^\nu\,\mathrm{sh}\,at}{\Gamma(\nu+1)}$, $\mathrm{Re}\,\nu>-1$
22.158	$p\left(\sqrt{p+a}-\sqrt{p}\right)^{2\nu}$	$\frac{\nu a^\nu}{t}e^{-\frac{at}{2}}I_\nu\left(\frac{at}{2}\right)$, $\mathrm{Re}\,\nu>0$
22.159	$p\sqrt{\frac{p}{p+a}}\left(\sqrt{p+a}-\sqrt{p}\right)^{2\nu}$	$\frac{a^{\nu+1}e^{-\frac{at}{2}}}{2}\left[I'_\nu\left(\frac{at}{2}\right)-I_\nu\left(\frac{at}{2}\right)\right]$ $\mathrm{Re}\,\nu>0$
22.160	$\frac{\left(\sqrt{p+a}-\sqrt{a}\right)^{\nu+1}}{p^\nu}$	$\sqrt{\frac{2}{\pi}}(\nu+1)(2t)^{\frac{\nu-1}{2}}e^{-\frac{at}{2}}\times$ $\times D_{-\nu-2}\left(\sqrt{2at}\right)$, $\mathrm{Re}\,\nu>-1$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
22.161	$\dfrac{(\sqrt{p+a}-\sqrt{a})^\nu}{p^{\nu-1}\sqrt{p+a}}$	$\sqrt{\dfrac{2}{\pi}}(2t)^{\frac{\nu-1}{2}}e^{-\frac{at}{2}}D_{-\nu}(\sqrt{2at})$ $\operatorname{Re}\nu>-1$
22.162	$\dfrac{p}{(\sqrt{p+a}+\sqrt{p})^{2\nu}}$	$\dfrac{\nu e^{-\frac{at}{2}}I_\nu\left(\frac{at}{2}\right)}{a^\nu t}$, $\operatorname{Re}\nu>0$
22.163	$\dfrac{p\sqrt{p}}{\sqrt{p+a}(\sqrt{p}+\sqrt{p+a})^{2\nu}}$	$\dfrac{a^{1-\nu}e^{-\frac{at}{2}}}{2}\left[I'_\nu\left(\dfrac{at}{2}\right)-I_\nu\left(\dfrac{at}{2}\right)\right]$ $\operatorname{Re}\nu>0$
22.164	$(\sqrt{p^2+a^2}-p)^\nu$	$a^\nu[1-\nu Ji_\nu(at)]$, $\operatorname{Re}\nu>0$
22.165	$p(\sqrt{p^2+a^2}-p)^\nu$	$\dfrac{\nu a^\nu}{t}J_\nu(at)$, $\operatorname{Re}\nu>0$
22.166	$p(p-\sqrt{p^2-a^2})^\nu$	$\dfrac{\nu a^\nu}{t}I_\nu(at)$, $\operatorname{Re}\nu>0$
22.167	$(p+\sqrt{p^2-a^2})^\nu+$ $+(p-\sqrt{p^2-a^2})^\nu$	$2a^\nu\left[\dfrac{\nu}{\pi}\sin\nu\pi Ki_\nu(at)+\cos\dfrac{\nu\pi}{2}\right]$ $-1<\operatorname{Re}\nu<1$
22.168	$(\sqrt{p^2+a^2}+p)^\nu+$ $+(\sqrt{p^2+a^2}-p)^\nu\cos\nu\pi$	$a^\nu[1+\cos\nu\pi-\nu\sin\nu\pi Yi_\nu(at)]$ $-1<\operatorname{Re}\nu<1$
22.169	$\dfrac{p(p-\sqrt{p^2-a^2})^\nu}{\sqrt{p^2-a^2}}$	$a^\nu I_\nu(at)$, $\operatorname{Re}\nu>-1$
22.170	$\dfrac{p(\sqrt{p^2+a^2}-p)^\nu}{\sqrt{p^2+a^2}}$	$a^\nu J_\nu(at)$, $\operatorname{Re}\nu>-1$
22.171	$\dfrac{p(p-\sqrt{p^2-ia^2})^\nu}{\sqrt{p^2-ia^2}}$	$a^\nu i^{-\frac{\nu}{2}}(\operatorname{ber}_\nu at+i\operatorname{bei}_\nu at)$ $\operatorname{Re}\nu>-1$
22.172	$\dfrac{p[(p+\sqrt{p^2-a^2})^\nu-(p-\sqrt{p^2-a^2})^\nu]}{\sqrt{p^2-a^2}}$	$\dfrac{2a^\nu}{\pi}\sin\nu\pi K_\nu(at)$, $-1<\operatorname{Re}\nu<1$

№	$\bar{f}(p) = p\int\limits_0^\infty e^{-pt} f(t)\,dt$	$f(t)$
22.173	$\frac{p[(p+\sqrt{p^2-ia^2})^\nu-(p-\sqrt{p^2-ia^2})^\nu]}{\sqrt{p^2-ia^2}}$	$\frac{2a^\nu}{\pi} i^{\frac{3\nu}{2}} \sin \nu\pi\, (\mathrm{ker}_\nu\, at + i\, \mathrm{kei}_\nu\, at)$ $-1 < \mathrm{Re}\,\nu < 1$
22.174	$p\left[\frac{(\sqrt{p^2+a^2}-p)^\nu \cos\nu\pi}{\sqrt{p^2+a^2}} - \frac{(\sqrt{p^2+a^2}+p)^\nu}{\sqrt{p^2+a^2}}\right]$	$a^\nu \sin \nu\pi Y_\nu(at), \quad -1 < \mathrm{Re}\,\nu < 1$
22.175	$\frac{p(\sqrt{p}-\sqrt{p-a})^{2\nu}}{\sqrt{p(p-a)}}$	$a^\nu e^{\frac{at}{2}} I_\nu\left(\frac{at}{2}\right), \quad \mathrm{Re}\,\nu > -1$
22.176	$\frac{p(\sqrt{p+a}-\sqrt{p})^{2\nu}}{\sqrt{p(p+a)}}$	$a^\nu e^{-\frac{at}{2}} I_\nu\left(\frac{at}{2}\right), \quad \mathrm{Re}\,\nu > -1$
22.177	$\frac{p}{(p+\sqrt{p^2+a^2})^\nu}$	$\frac{\nu}{a^\nu}\frac{J_\nu(at)}{t}, \quad \mathrm{Re}\,\nu > 0$
22.178	$\frac{p}{(p+\sqrt{p^2-a^2})^\nu}$	$\frac{\nu}{a^\nu}\frac{I_\nu(at)}{t}, \quad \mathrm{Re}\,\nu > 0$
22.179	$\frac{p^2+\nu p\sqrt{p^2-a^2}}{(p+\sqrt{p^2-a^2})^\nu}$	$\frac{\nu(\nu^2-1) I_\nu(at)}{a^\nu t^2}, \quad \mathrm{Re}\,\nu > 1$
22.180	$\frac{p^2+\nu p\sqrt{p^2+a^2}}{(p+\sqrt{p^2+a^2})^\nu}$	$\frac{\nu(\nu^2-1) J_\nu(at)}{a^\nu t^2}, \quad \mathrm{Re}\,\nu > 1$
22.181	$\frac{1}{\sqrt{p^2+a^2}(p+\sqrt{p^2+a^2})^\nu}$	$\frac{1}{a^\nu}\int\limits_0^t J_\nu(at)\,dt, \quad \mathrm{Re}\,\nu > -1$
22.182	$\frac{p}{\sqrt{p^2+a^2}(p+\sqrt{p^2+a^2})^\nu}$	$\frac{1}{a^\nu} J_\nu(at), \quad \mathrm{Re}\,\nu > -1$
22.183	$\frac{p}{\sqrt{p^2-a^2}(p+\sqrt{p^2-a^2})^\nu}$	$\frac{1}{a^\nu} I_\nu(at), \quad \mathrm{Re}\,\nu > -1$
22.184	$\frac{p}{\sqrt{p^2+ap}(\sqrt{p}+\sqrt{p^2+a^2})^{2\nu}}$	$\frac{1}{a^\nu} e^{-\frac{at}{2}} I_\nu\left(\frac{at}{2}\right) \quad \mathrm{Re}\,\nu > -1$
22.185	$\frac{1}{\sqrt{(p+b)^2+a^2}} \times \frac{p}{[p+b+\sqrt{(p+b)^2+a^2}]^\nu}$	$\frac{1}{a^\nu} e^{-bt} J_\nu(at), \quad \mathrm{Re}\,\nu > -1$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
22.186	$\frac{1}{\sqrt{(p+b)^2-a^2}}\times$ $\times\frac{p}{[p+b+\sqrt{(p+b)^2-a^2}]^\nu}$	$\frac{1}{a^\nu}e^{-bt}I_\nu(at),\quad \operatorname{Re}\nu>-1$
22.187	$\frac{p\,(p+\nu\sqrt{p^2+a^2})}{(\sqrt{p^2+a^2})^3\,(p+\sqrt{p^2+a^2})^\nu}$	$\frac{1}{a^\nu}tJ_\nu(at),\quad \operatorname{Re}\nu>-2$
22.188	$\frac{p\,(p+\nu\sqrt{p^2-a^2})}{(\sqrt{p^2-a^2})^3\,(p+\sqrt{p^2-a^2})^\nu}$	$\frac{1}{a^\nu}tI_\nu(at),\quad \operatorname{Re}\nu>-2$
22.189	$\frac{p\,(2\nu\sqrt{p^2-a^2}-p)}{(p+\sqrt{p^2-a^2})^{2\nu}}$	$\frac{2\nu\,(4\nu^2-1)}{a^{2\nu}}\cdot\frac{I_\nu(at)}{t^2},\quad \operatorname{Re}\nu>-1$
22.190	$\frac{(p+\sqrt{p^2+a^2})^{2\nu}+a^{2\nu}\cos\nu\pi}{(p+\sqrt{p^2+a^2})^\nu}$	$a^\nu[1+\cos\nu\pi-\nu\sin\nu\pi Yi_\nu(at)]$ $-1<\operatorname{Re}\nu<1$
22.191	$\frac{p\,(p-a)^\lambda}{(p-b)^{\lambda+\frac{1}{2}}}$	$\frac{\Gamma\left(\frac{1}{2}-\lambda\right)}{2^{\lambda+1}\pi\sqrt{t}}e^{\frac{(a+b)t}{2}}\times$ $\times\{D_{2\lambda}(-\sqrt{2(a-b)t}+$ $+D_{2\lambda}(\sqrt{2(a-b)t})\}$
22.192	$\frac{p\,(p-a)^\lambda}{(p-b)^{\lambda+\frac{3}{2}}}$	$\frac{\Gamma\left(-\frac{1}{2}-\lambda\right)}{2^{\lambda+\frac{3}{2}}\pi\sqrt{a-b}}e^{\frac{(a+b)t}{2}}\times$ $\times\{D_{2\lambda+1}(-\sqrt{2(a-b)t})-$ $-D_{2\lambda+1}(\sqrt{2(a-b)t})\}$
22.193	$p^{-\gamma+1}\left(1-\frac{\lambda_1}{p}\right)^{-\beta_1}\ldots\left(1-\frac{\lambda_n}{p}\right)^{-\beta_n}$	$\frac{t^{\gamma-1}}{\Gamma(\gamma)}\Phi_2(\beta_1,\ldots,\beta_n;\gamma;\lambda_1t,$ $\ldots,\lambda_nt),\quad \operatorname{Re}\gamma>0$
22.194	$\frac{p}{p^{2\lambda}(p^2+a^2)^\nu}$	$\frac{t^{2\lambda+2\nu-1}}{\Gamma(2\lambda+2\nu)}\,{}_1F_2\left(\nu;\lambda+\nu,\lambda+\nu+\frac{1}{2};\right.$ $\left.-\frac{a^2t^2}{4}\right),\quad \operatorname{Re}(\lambda+\nu)>0$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
22.195	$\dfrac{p}{p^{3\lambda}(p^3+a^3)^\nu}$	$\dfrac{t^{3\lambda+3\nu-1}}{\Gamma(3\lambda+3\nu)}\,{}_1F_3\left(\nu;\ \lambda+\nu,\ \lambda+\nu+\dfrac{1}{3},\ \lambda+\nu+\dfrac{2}{3};\ -\dfrac{a^3t^3}{27}\right)$, $\operatorname{Re}(\lambda+\nu)>0$
22.196	$\dfrac{p(\lambda p+\mu)}{(p^2-b^2)(p+a)^\nu}$	$\dfrac{1}{2\Gamma(\nu)}\left(\lambda+\dfrac{\mu}{b}\right)e^{bt}\dfrac{\gamma[\nu,(a+b)t]}{(a+b)^\nu}+\dfrac{1}{2\Gamma(\nu)}\left(\lambda-\dfrac{\mu}{b}\right)e^{-bt}\dfrac{\gamma[\nu,(a-b)t]}{(a-b)^\nu}$ $\operatorname{Re}\nu>0$
22.197	$p(\sqrt{p+a}+\sqrt{b})^\nu$	$-\sqrt{\dfrac{2}{\pi}}\,\nu\,(2t)^{-\frac{\nu}{2}-1}\times e^{\left(\frac{b}{2}-a\right)t}D_{\nu-1}(\sqrt{2bt})$ $\operatorname{Re}\nu<0$
22.198	$\dfrac{p(\sqrt{p+a}+\sqrt{b})^\nu}{\sqrt{p+a}}$	$\sqrt{\dfrac{2}{\pi}}\,(2t)^{-\frac{\nu+1}{2}}e^{\left(\frac{b}{2}-a\right)t}\times D_\nu(\sqrt{2bt})$, $\operatorname{Re}\nu<1$
22.199	$\dfrac{p\sqrt{p+a}}{(\sqrt{p+a}+\sqrt{p-a})^{2\nu}\sqrt{p-a}}$	$\dfrac{(2a)^{1-\nu}}{4}\{I_{\nu-1}(at)+2I_\nu(at)+I_{\nu+1}(at)\}$, $\operatorname{Re}\nu>0$
22.200	$\dfrac{p^2}{(\sqrt{p^2+a^2})^{2\nu+1}}$	$\dfrac{a\sqrt{\pi}}{(2u)^\nu\,\Gamma\left(\nu+\dfrac{1}{2}\right)}t^\nu J_{\nu-1}(at)$, $\operatorname{Re}\nu>0$
22.201	$\dfrac{p^2}{(p+\sqrt{p^2+a^2})^\nu}$	$\dfrac{\nu}{a^{\nu-1}}\dfrac{J_{\nu-1}(at)}{t}-\dfrac{\nu(\nu+1)}{a^\nu}\dfrac{J_\nu(at)}{t^2}$ $\operatorname{Re}\nu>1$
22.202	$\dfrac{p^2}{\sqrt{p^2+a^2}\,(p+\sqrt{p^2+a^2})^\nu}$	$\dfrac{1}{2a^{\nu-1}}J_{\nu-1}(at)-\dfrac{1}{2a^{\nu-1}}J_{\nu+1}(at)$ $\operatorname{Re}\nu>0$
22.203	$\dfrac{p^2}{(\sqrt{p^2-a^2})^{2\nu+1}}$	$\dfrac{\sqrt{\pi}}{\Gamma\left(\nu+\dfrac{1}{2}\right)}\dfrac{a}{(2a)^\nu}t^\nu I_{\nu-1}(at)$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
22.204	$\dfrac{p^2}{(p+\sqrt{p^2-a^2})^\nu}$	$\dfrac{\nu}{a^{\nu-1}}\dfrac{I_{\nu-1}(at)}{t}-\dfrac{\nu(\nu+1)}{a^\nu}\dfrac{I_\nu(at)}{t^2}$ $\operatorname{Re}\nu>1$
22.205	$\dfrac{p^2}{\sqrt{p^2-a^2}\,(p+\sqrt{p^2-a^2})^\nu}$	$\dfrac{1}{2a^{\nu-1}}I_{\nu-1}(at)+\dfrac{1}{2a^{\nu-1}}I_{\nu+1}(at)$ $\operatorname{Re}\nu>0$
22.206	$\dfrac{p}{\sqrt{\dfrac{\pi p}{2}(p^2+4a^2)}}$	$t^{\frac{1}{2}}J_{-\frac{1}{4}}(at)\,J_{\frac{1}{4}}(at)$
22.207	$\dfrac{p\,(p+\sqrt{p^2+4a^2})}{\sqrt{2\pi p\,(p^2+4a^2)}}$	$a\sqrt{t}\,J_{-\frac{1}{4}}(at)\,J_{-\frac{3}{4}}(at)$

§ 23. Показательные функции

23.1	$e^{-\alpha p}$	$\begin{matrix}0 \text{ при } t<\alpha\\ 1 \text{ при } t>\alpha\end{matrix},\ \alpha>0$
23.2	$1-e^{-\alpha p}$	$\begin{matrix}1 \text{ при } 0<t<\alpha\\ 0 \text{ при } t>\alpha\end{matrix},\ \alpha>0$
23.3	$e^{-\alpha p}-e^{-\beta p}$	0 при $0<t<\alpha$ 1 при $\alpha<t<\beta,\quad 0\leqslant\alpha<\beta$ 0 при $t>\beta$
23.4	$\dfrac{e^{-\alpha p}-e^{-\beta p}}{p}$	0 при $0<t<\alpha$ $t-\alpha$ при $\alpha<t<\beta,\ 0\leqslant\alpha<\beta$ $\beta-\alpha$ при $t>\beta$
23.5	$\dfrac{e^{-\alpha p}-e^{-\beta p}}{p^2}$	0 при $0<t<\alpha$ $\dfrac{(t-\alpha)^2}{2}$ при $\alpha<t<\beta,\ 0\leqslant\alpha<\beta$ $t(\beta-\alpha)+\dfrac{\alpha^2-\beta^2}{2}$ при $t>\beta$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.6	$\dfrac{(e^{-\alpha p}-e^{-\beta p})^2}{p}$	0 при $t<2\alpha$ $t-2\alpha$ при $2\alpha<t<\alpha+\beta$ $2\beta-t$ при $\alpha+\beta<t<2\beta$ 0 при $t>2\beta$, $0\leqslant\alpha<\beta$
23.7	$\dfrac{(e^{-\alpha p}-e^{-\beta p})^2}{p^2}$	0 при $t<2\alpha$ $\dfrac{(t-2\alpha)^2}{2}$ при $2\alpha<t<\alpha+\beta$ $(\beta-\alpha)^2-\dfrac{(t-2\beta)^2}{2}$ при $\alpha+\beta<t<2\beta$ $(\beta-\alpha)^2$ при $t>2\beta$, $0\leqslant\alpha<\beta$
23.8	$\dfrac{(e^{-\alpha p}-e^{-\beta p})^3}{p^2}$ $0\leqslant\alpha<\beta$	0 при $t<3\alpha$ $\dfrac{(t-3\alpha)^2}{2}$ при $3\alpha<t<2\alpha+\beta$ $\dfrac{3(\beta-\alpha)^2}{4}-\left[t-\dfrac{3(\alpha+\beta)}{2}\right]^2$ при $2\alpha+\beta<t<\alpha+2\beta$ $\dfrac{(3\beta-t)^2}{2}$ при $\alpha+2\beta<t<3\beta$ 0 при $t>3\beta$
23.9	$\dfrac{e^{-\alpha p}}{p^{\nu-1}}$	0 при $0<t<\alpha$ $\dfrac{(t-\alpha)^{\nu-1}}{\Gamma(\nu)}$ при $t>\alpha$, $\operatorname{Re}\nu>0$
23.10	$\dfrac{1-e^{-\alpha p}}{p}$	α при $t>\alpha$ t при $t<\alpha$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.11	$\frac{pe^{-\alpha p}}{p+a},\ \alpha>0$	0 при $t<\alpha$ $e^{-a(t-\alpha)}$ при $t>\alpha$
23.12	$\frac{p(1-e^{-2n\pi p})}{p-i}$	0 при $t>2n\pi$ e^{it} при $t<2n\pi$
23.13	$\frac{a^2}{p^2+a^2}\left(1-e^{-\frac{2n\pi}{a}p}\right)$	0 при $t>\frac{2n\pi}{a}$ $2\sin^2\frac{at}{2}$ при $t<\frac{2n\pi}{a}$
23.14	$\frac{p}{p^2+1}(1+e^{-\pi p})$	0 при $t>\pi$ $\sin t$ при $t<\pi$
23.15	$\frac{pa}{p^2+a^2}\left(1-e^{-\frac{2n\pi}{a}p}\right)$	0 при $t>\frac{2n\pi}{a}$ $\sin at$ при $t<\frac{2n\pi}{a}$
23.16	$\frac{p^2}{p^2+1}(1+e^{-\pi p})$	0 при $t>\pi$ $\cos t$ при $t<\pi$
23.17	$\frac{p^2}{p^2+a^2}\left(1-e^{-\frac{2n\pi}{a}p}\right)$	0 при $t>\frac{2n\pi}{a}$ $\cos at$ при $t<\frac{2n\pi}{a}$
23.18	$\frac{p}{p^2+a^2}\left(1-e^{-\frac{2n\pi}{a}p}\right)\times$ $\times(a\cos\alpha+p\sin\alpha)$	0 при $t>\frac{2n\pi}{a}$ $\sin(at+\alpha)$ при $t<\frac{2n\pi}{a}$
23.19	$\frac{p}{p^2+a^2}\left(1-e^{-\frac{2n\pi}{a}p}\right)\times$ $\times(p\cos\alpha-a\sin\alpha)$	0 при $t>\frac{2n\pi}{a}$ $\cos(at+\alpha)$ при $t<\frac{2n\pi}{a}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.20	$\frac{p(\alpha p+\beta)}{p^2-b^2}e^{-ap}$	0 при $t<a$ $\alpha\,\mathrm{ch}\,[b(t-a)]+\frac{\beta}{b}\,\mathrm{sh}\,[b(t-a)]$ при $t>a$ $a>0$
23.21	$\frac{p(\alpha p+\beta)}{p^2+b^2}e^{-ap}$	0 при $t<a$ $\alpha\cos[b(t-a)]+\frac{\beta}{b}\sin[b(t-a)]$ при $t>a$ $a>0$
23.22	$\frac{2p^2+a^2}{p^2+a^2}\left(1-e^{-\frac{2n\pi}{a}p}\right)$	0 при $t>\frac{2n\pi}{a}$ $2\cos^2\frac{at}{2}$ при $t<\frac{2n\pi}{a}$
23.23	$\frac{p\exp\left(-x\sqrt{\frac{p}{a}}\right)}{(p-ac^2)^2}$	$\frac{1}{2}\exp(ac^2t)\left\{\left(t-\frac{x}{2ac}\right)e^{-cx}\times\right.$ $\times\,\mathrm{erfc}\left(\frac{x}{2\sqrt{at}}-c\sqrt{at}\right)+$ $+\left(t+\frac{x}{2ac}\right)e^{cx}\,\mathrm{erfc}\left(\frac{x}{2\sqrt{at}}+\right.$ $\left.\left.+c\sqrt{at}\right)\right\}$
23.24	$\frac{1}{e^{ap}-1}$	n при $na<t<(n+1)a,\quad a>0$
23.25	$\frac{1}{p(e^{ap}-1)}$	$nt-\frac{an(n+1)}{2}$ при $na<t<(n+1)a$, $a>0$
23.26	$\frac{p}{p^2+a^2}[e^{-\alpha p}(a\cos a\alpha+p\sin a\alpha)-$ $-e^{-\beta p}(a\cos a\beta+p\sin a\beta)]$	$\sin at$ при $\alpha<t<\beta$, 0 в остальных случаях
23.27	$\frac{p}{p^2+a^2}[e^{-\alpha p}(p\cos a\alpha-a\sin a\alpha)-$ $-e^{-\beta p}(p\cos a\beta-a\sin a\beta)]$	$\cos at$ при $\alpha<t<\beta$ 0 в остальных случаях

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.28	$\frac{pe^{-\alpha p}}{p^2+4a^2}\left[\frac{2a^2}{p}+p\sin^2 a\alpha+a\sin 2a\alpha\right]-\frac{pe^{-\beta p}}{p^2+4a^2}\left[\frac{2a^2}{p}+p\sin^2\beta a+a\sin 2\beta a\right]$	$\sin^2 at$ при $\alpha<t<\beta$ 0 в остальных случаях
23.29	$\frac{pe^{-\alpha p}}{p^2+4a^2}\left[\frac{2a^2}{p}+p\cos^2 a\alpha-a\sin 2a\alpha\right]-\frac{pe^{-\beta p}}{p^2+4a^2}\left[\frac{2a^2}{p}+p\cos^2\beta a-a\sin 2\beta a\right]$	$\cos^2 at$ при $\alpha<t<\beta$ 0 в остальных случаях
23.30	$\frac{p}{p^2-a^2}[e^{-\alpha p}(a\operatorname{ch}a\alpha+p\operatorname{sh}a\alpha)-e^{-\beta p}(a\operatorname{ch}a\beta+p\operatorname{sh}a\beta)]$	$\operatorname{sh}at$ при $\alpha<t<\beta$ 0 в остальных случаях
23.31	$\frac{p}{p^2-a^2}[e^{-\alpha p}(p\operatorname{ch}a\alpha+a\operatorname{sh}a\alpha)-e^{-\beta p}(p\operatorname{ch}a\beta+a\operatorname{sh}a\beta)]$	$\operatorname{ch}at$ при $\alpha<t<\beta$ 0 в остальных случаях
23.32	$\frac{pe^{-\alpha p}}{p^2-4a^2}\left[p\operatorname{sh}^2\alpha a+\frac{2a^2}{p}+a\operatorname{sh}2\alpha a\right]-\frac{pe^{-\beta p}}{p^2-4a^2}\left[\frac{2a^2}{p}+p\operatorname{sh}^2\beta a+a\operatorname{sh}2\beta a\right]$	$\operatorname{sh}^2 at$ при $\alpha<t<\beta$ 0 в остальных случаях
23.33	$\frac{pe^{-\alpha p}}{p^2-4a^2}\left[p\operatorname{ch}^2\alpha a-\frac{2a^2}{p}+a\operatorname{sh}2\alpha a\right]-\frac{pe^{-\beta p}}{p^2-4a^2}\left[p\operatorname{ch}^2\beta a-\frac{2a^2}{p}+a\operatorname{sh}2\beta a\right]$	$\operatorname{ch}^2 at$ при $\alpha<t<\beta$ 0 в остальных случаях
23.34	$\frac{p}{(p+a)^2+b^2}\left[1-e^{-\frac{2\pi n}{b}(p+a)}\right]$	0 при $t>\frac{2\pi n}{b}$ $e^{-at}\frac{\sin bt}{b}$ при $t<\frac{2\pi n}{b}$
23.35	$\frac{n!}{p^n}-e^{-p\alpha}\left[\alpha^n+\frac{n\alpha^{n-1}}{p}+\frac{n(n-1)}{p^2}\alpha^{n-2}+\ldots+\frac{n!}{p^n}\right]$	0 при $t>\alpha$ t^n при $t<\alpha$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.36	$\frac{pe^{-\alpha p}}{(p+a)^\nu}$	0 при $t<\alpha$ $\frac{e^{-a(t-\alpha)}(t-\alpha)^{\nu-1}}{\Gamma(\nu)}$ при $t>\alpha$
23.37	$(1-e^{-\alpha p})^2$	1 при $0<t<\alpha$ -1 при $\alpha<t<2\alpha$ 0 при $t>2\alpha$
23.38	$\frac{(1-e^{-\alpha p})^2}{p}$	t при $0<t<\alpha$ $2\alpha-t$ при $\alpha<t<2\alpha$ 0 при $t>2\alpha$
23.39	$\frac{p^2e^{-\alpha p}}{p^2+1}(1-e^{-2\pi np})$	$\cos(t-\alpha)$ при $\alpha<t<\alpha+2\pi n$ 0 в остальных случаях
23.40	$\frac{a^2}{p^2+a^2}e^{-\frac{2n\pi}{a}p}\left(1-e^{-\frac{\pi}{a}p}\right)$	$2\sin^2\frac{at}{2}$ при $\frac{2n\pi}{a}<t<\frac{(2n+1)\pi}{a}$ 0 в остальных случаях
23.41	$\frac{2p^2+a^2}{p^2+a^2}e^{-\frac{2n\pi}{a}p}\left(1-e^{-\frac{\pi p}{a}}\right)$	$2\cos^2\frac{at}{2}$ при $\frac{2n\pi}{a}<t<\frac{(2n+1)\pi}{a}$ 0 в остальных случаях
23.42	$\frac{1}{(e^p-1)}$	$[t]$
23.43	$\frac{1}{1+e^{-ap}}$	1 при $2na<t<(2n+1)a$ 0 в остальных случаях
23.44	$\frac{1}{1-e^{-ap}}$	$n+1$ при $na<t<(n+1)a$ $n=0, 1, 2, \ldots;\ a>0$
23.45	$\frac{p}{(p+b)\,[e^{a(p+b)}+1]}$	e^{-bt} при $(2n-1)a<t<2na$ 0 в остальных случаях $n=1, 2, 3, \ldots$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)dt$	$f(t)$
23.46	$\dfrac{p}{(p+b)\,[e^{a(p+b)}-1]}$	0 при $0<t<a$ ne^{-bt} при $na<t<(n+1)a$ $n=1,2,3,\ldots$
23.47	$\dfrac{p}{(p+b)\,[e^{a(p+b)}-c]}$	0 при $0<t<a$ $\dfrac{1-c^n}{1-c}e^{-bt}$ при $na<t<(n+1)a$ $n=1,2,3,\ldots$
23.48	$\dfrac{p}{(p+b)^2\,[e^{a(p+b)}+1]}$	0 при $0<t<a$ $\left[\dfrac{1-(-1)^n}{4}(2t-a)+\dfrac{an(-1)^n}{2}\right]e^{-bt}$ при $na<t<(n+1)a$ $n=1,2,3,\ldots$
23.49	$\dfrac{p}{(p+b)^2\,[e^{a(p+b)}-1]}$	0 при $0<t<a$ $\left[nt-\dfrac{an(n+1)}{2}\right]e^{-bt}$ при $na<t<(n+1)a$ $n=1,2,3,\ldots$
23.50	$\dfrac{p}{(p+b)^2\,[e^{a(p+b)}-c]}$	0 при $0<t<a$ $\left[\dfrac{1-c^n}{1-c}t-\right.$ $\left.-\dfrac{1-(n+1)c^n+nc^{n+1}}{(1-c)^2}a\right]e^{-bt}$ при $na<t<(n+1)a$ $n=1,2,3,\ldots$
23.51	$\dfrac{a^2}{(p^2+a^2)\left(1+e^{-\frac{\pi}{a}p}\right)}$	$2\sin^2\dfrac{at}{2}$ при $\dfrac{2n\pi}{a}<t<\dfrac{(2n+1)\pi}{a}$ 0 в остальных случаях $n=0,1,2,\ldots$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.52	$\dfrac{a^2}{(p^2+a^2)\left(1+e^{-\frac{2n\pi}{a}p}\right)}$	$2\sin^2\dfrac{at}{2}$ при $2k2n\dfrac{\pi}{a}<t<(2k+1)\dfrac{2n\pi}{a}$; 0 в остальных случаях $k=0,\ 1,\ 2,\ \ldots$
23.53	$\dfrac{pa}{(p^2+a^2)\left(1+e^{-\frac{2n\pi}{a}p}\right)}$	$\sin at$ при $2k2n\dfrac{\pi}{a}<t<(2k+1)2n\dfrac{\pi}{a}$; 0 в остальных случаях $k=0,\ 1,\ 2,\ \ldots$
23.54	$\dfrac{pa}{(p^2+a^2)\left(1-e^{-\frac{\pi}{a}p}\right)}$	$\sin at$ при $2k\dfrac{\pi}{a}<t<(2k+1)\dfrac{\pi}{a}$; 0 в остальных случаях $k=0,\ 1,\ 2,\ \ldots$
23.55	$\dfrac{2p^2+a^2}{(p^2+a^2)\left(1+e^{-\frac{\pi}{a}p}\right)}$	$2\cos^2\dfrac{at}{2}$ при $2k\dfrac{\pi}{a}<t<(2k+1)\dfrac{\pi}{a}$; 0 в остальных случаях $k=0,\ 1,\ 2,\ \ldots$
23.56	$\dfrac{2p^2+a^2}{(p^2+a^2)\left(1+e^{-\frac{2n\pi}{a}p}\right)}$	$2\cos^2\dfrac{at}{2}$ при $2k2n\dfrac{\pi}{a}<t<(2k+1)2n\dfrac{\pi}{a}$; 0 в остальных случаях $k=0,\ 1,\ 2,\ \ldots$
23.57	$\dfrac{p}{p^2+a^2}\left(\dfrac{p}{a}+\dfrac{2e^{-\frac{\pi}{2a}p}}{1-e^{-\frac{\pi}{a}p}}\right)$	$\dfrac{1}{a}\lvert\cos at\rvert$
23.58	$\dfrac{p\left(1+e^{-\frac{\pi}{a}p}\right)}{(p^2+a^2)\left(1-e^{-\frac{\pi}{a}p}\right)}$	$\dfrac{1}{a}\lvert\sin at\rvert$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.59	$\dfrac{p^2\left(1+e^{-\frac{\pi}{a}p}\right)}{(p^2+a^2)\left(1-e^{-\frac{\pi}{a}p}\right)}$	$\cos at$ при $2k\dfrac{\pi}{a}<t<(2k+1)\dfrac{\pi}{a}$ $-\cos at$ при $(2k+1)\dfrac{\pi}{a}<t<(2k+2)\dfrac{\pi}{a}$ $k=0,\ 1,\ 2,\ \ldots$
23.60	$\dfrac{p}{(p^2+c^2)(e^{-ap}+1)}$	$\dfrac{\sin\left(ct+\frac{ac}{2}\right)}{2c\cos\left(\frac{ac}{2}\right)}+$ $+2a\sum\limits_{n=0}^{\infty}\dfrac{\cos\left[(2n+1)\frac{\pi}{a}t\right]}{a^2c^2-(2n+1)^2\pi^2}$ $a>0,\quad c>0;\quad ac\neq(2n+1)\pi$
23.61	$e^{-ap}(e^{ap}-1)^{-m}$	$\binom{n}{m}\quad na<t<(n+1)a,\qquad a>0$ $n=0,\ 1,\ 2,\ \ldots$
23.62	$e^{\frac{\alpha}{p}}$	$I_0(2\sqrt{\alpha t})$
23.63	$e^{-\frac{\alpha}{p}}$	$J_0(2\sqrt{\alpha t})$
23.64	$p\left[\exp\left(-\dfrac{1}{ap}\right)-1\right]$	$-\dfrac{1}{\sqrt{at}}J_1\left(2\sqrt{\dfrac{t}{a}}\right)$
23.65	$p\left\{\exp\left[\dfrac{1}{a(p+b)}\right]-1\right\}$	$\dfrac{e^{-bt}}{\sqrt{at}}I_1\left(2\sqrt{\dfrac{t}{a}}\right)$
23.66	$\dfrac{p}{(p+b)^2}\exp\left[-\dfrac{1}{a(p+b)}\right]$	$\sqrt{at}\,e^{-bt}J_1\left(2\sqrt{\dfrac{t}{a}}\right)$
23.67	$p^{-n}\exp\left(\dfrac{1}{ap}\right)$	$(at)^{\frac{n}{2}}I_n\left(2\sqrt{\dfrac{t}{a}}\right)$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.68	$\dfrac{p}{\left(p+\dfrac{1}{a}\right)^{\nu+1}}\exp\left\{\dfrac{1}{a^2\left(p+\dfrac{1}{a}\right)}\right\}$	$(a^2t)^{\frac{\nu}{2}}\exp\left(-\dfrac{t}{a}\right)I_\nu\left(\dfrac{2\sqrt{t}}{a}\right)$, $\operatorname{Re}\nu>-1$
23.69	$\dfrac{p}{(1+ap)^{\nu+1}}\exp\left(-\dfrac{p}{1+ap}\right)$	$\dfrac{t}{a}^{\frac{\nu}{2}}\exp\left(-\dfrac{1+t}{a}\right)I_\nu\left(\dfrac{2\sqrt{t}}{a}\right)$ $\operatorname{Re}\nu>-1$
23.70	$\dfrac{e^{-\frac{\alpha}{p}}}{p^n(p+a)}$	$\int\limits_0^t e^{-as}\left(\dfrac{t-s}{\alpha}\right)^{\frac{n}{2}}J_n\left[2\sqrt{\alpha(t-s)}\right]ds$
23.71	$\dfrac{e^{-\frac{\alpha}{p}}}{p^{n-2}(p^2+a^2)}$	$\dfrac{1}{a^n}U_n(2at,\ 2\sqrt{at})$, $\operatorname{Re}n>-1$
23.72	$\sqrt{p}\ e^{\frac{\alpha^2}{p}}$	$\dfrac{\operatorname{ch}2\alpha\sqrt{t}}{\sqrt{\pi t}}$
23.73	$\sqrt{p}\ e^{-\frac{\alpha^2}{4p}}$	$\dfrac{\cos\alpha\sqrt{t}}{\sqrt{\pi t}}$
23.74	$\dfrac{e^{\frac{\alpha^2}{p}}}{\sqrt{p}}$	$\dfrac{\operatorname{sh}(2\alpha\sqrt{t})}{\alpha\sqrt{\pi}}$
23.75	$\dfrac{e^{\frac{\alpha^2}{4p}}}{\sqrt{p}}\left(1+\dfrac{\alpha^2}{2p}\right)$	$2\sqrt{\dfrac{t}{\pi}}\operatorname{ch}(\alpha\sqrt{t})$
23.76	$\dfrac{e^{-\frac{\alpha^2}{4p}}}{\sqrt{p}}$	$\dfrac{2}{\alpha\sqrt{\pi}}\sin(\alpha\sqrt{t})$
23.77	$\dfrac{1}{\sqrt{p}}e^{-\frac{\alpha^2}{4p}}\left(1-\dfrac{\alpha^2}{2p}\right)$	$2\sqrt{\dfrac{t}{\pi}}\cos(\alpha\sqrt{t})$
23.78	$\dfrac{e^{-\frac{\alpha^2}{4p}}}{\sqrt{p^3}}$	$\dfrac{4}{\alpha^2\sqrt{\pi}}\left(\dfrac{\sin\alpha\sqrt{t}}{\alpha}-\sqrt{t}\cos\alpha\sqrt{t}\right)$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.79	$\frac{p}{\sqrt{p+a}}\exp\left[\frac{1}{b(p+a)}\right]$	$\frac{1}{\sqrt{\pi t}}e^{-at}\operatorname{ch}\left(2\sqrt{\frac{t}{b}}\right)$
23.80	$\frac{p}{\sqrt{(p+a)^3}}\exp\left[\frac{1}{b(p+a)}\right]$	$\sqrt{\frac{b}{\pi}}e^{-at}\operatorname{sh}\left(2\sqrt{\frac{t}{b}}\right)$
23.81	$\frac{pe^{-\frac{1}{4(p+a)}}}{\sqrt{p+a}}$	$\frac{1}{\sqrt{\pi t}}e^{-at}\cos\sqrt{t}$
23.82	$\frac{e^{\frac{\alpha}{p}}}{p^{\nu}}$	$\left(\frac{t}{\alpha}\right)^{\frac{\nu}{2}}I_{\nu}(2\sqrt{\alpha t}),\ \operatorname{Re}\nu>-1$
23.83	$\frac{e^{-\frac{\alpha}{p}}}{p^{\nu}}$	$\left(\frac{t}{\alpha}\right)^{\frac{\nu}{2}}J_{\nu}(2\sqrt{\alpha t})\ \operatorname{Re}\nu>-1$
23.84	$\frac{p}{(p+a)^{\nu}}\exp\left[\frac{1}{b(p+a)}\right]$	$(bt)^{\frac{\nu-1}{2}}e^{-at}I_{\nu-1}\left(2\sqrt{\frac{t}{b}}\right), \operatorname{Re}\nu>1$
23.85	$\frac{1}{1-e^{-\frac{1}{p}}}$	$\sum_{k=0}^{\infty}J_0(2\sqrt{kt})$
23.86	$\frac{p}{p^2+1}e^{-\frac{\alpha p}{p^2+1}}$	$\int_0^t J_0(2\sqrt{(t-\tau)\tau})\,J_0(2\sqrt{\alpha\tau})\,d\tau$
23.87	$e^{\frac{1}{p^n}}$	${}_0F_n\left(\frac{1}{n},\ \frac{2}{n},\ \ldots,\frac{n-1}{n},\ 1;\ \frac{t^n}{n^n}\right)$
23.88	$\frac{e^{\frac{\alpha}{p^{\nu}}}}{p^{\nu-1}}$	$t^{\nu-1}\sum_{k=0}^{\infty}\frac{(\alpha t^{\nu})^k}{k!\,\Gamma[\nu(k+1)]},\quad \operatorname{Re}\nu>0$
23.89	$e^{-\alpha\sqrt{p}}$	$\operatorname{erfc}\frac{\alpha}{2\sqrt{t}}$
23.90	$\exp(-\sqrt{\alpha p})-1$	$-\operatorname{erf}\frac{1}{2}\sqrt{\frac{\alpha}{t}}$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.91	$pe^{-\alpha\sqrt{p}}$	$\Psi(\alpha, t),\quad \operatorname{Re}\alpha>0$
23.92	$p^2\exp(-\sqrt{\alpha p})$	$\left(\frac{\alpha}{2t}-3\right)\frac{1}{4\sqrt{t^5}}\sqrt{\frac{\alpha}{\pi}}\times$ $\times\exp\left(-\frac{\alpha}{4t}\right)$
23.93	$\frac{e^{-\alpha\sqrt{p}}}{p}$	$\left(t+\frac{\alpha^2}{2}\right)\operatorname{erfc}\frac{\alpha}{2\sqrt{t}}-\alpha t\chi(\alpha, t)$ $\operatorname{Re}\alpha\geqslant 0$
23.94	$\frac{1}{p}\left[e^{-\sqrt{\alpha p}}-1\right]$	$\frac{\alpha}{2}-\left(t+\frac{\alpha}{2}\right)\operatorname{erf}\frac{1}{2}\sqrt{\frac{\alpha}{t}}-$ $-\sqrt{\frac{\alpha t}{\pi}}\exp\left(-\frac{\alpha}{4t}\right)$
23.95	$\frac{e^{-\sqrt{\alpha p}}-1}{p+a}$	$\frac{e^{-at}}{2}\Big[2-\exp(i\sqrt{a\alpha})\times$ $\times\operatorname{erfc}\left(\frac{1}{2}\sqrt{\frac{\alpha}{t}}+i\sqrt{a\alpha}\right)-$ $-\exp(-i\sqrt{a\alpha})\operatorname{erfc}\left(\frac{1}{2}\sqrt{\frac{\alpha}{t}}-\right.$ $\left.-i\sqrt{at}\right)\Big]-\frac{1}{a}\operatorname{erf}\left(\frac{1}{2}\sqrt{\frac{\alpha}{t}}\right).$
23.96	$\sqrt{p}\,e^{-\sqrt{\alpha p}}$	$\frac{1}{\sqrt{\pi t}}\exp\left(-\frac{\alpha}{4t}\right)$
23.97	$\frac{pe^{-\sqrt{\alpha p}}}{p+a}$	$\frac{e^{-at}}{2}\Big[\exp(-i\sqrt{a\alpha})\times$ $\times\operatorname{erfc}\left(\frac{1}{2}\sqrt{\frac{\alpha}{t}}-i\sqrt{at}\right)+$ $+\exp(i\sqrt{a\alpha})\operatorname{erfc}\left(\frac{1}{2}\sqrt{\frac{\alpha}{t}}+\right.$ $\left.+i\sqrt{at}\right)\Big]$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.98	$\dfrac{p^2e^{-\sqrt{\alpha p}}}{p+a}$	$-\dfrac{ae^{-at}}{2}\Big[\exp(i\sqrt{a\alpha})\times\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+i\sqrt{at}\right)+\exp(-i\sqrt{a\alpha})\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}-i\sqrt{at}\right)\Big]+\dfrac{1}{2}\sqrt{\dfrac{\alpha}{\pi t^3}}\times\exp\left(-\dfrac{\alpha}{4t}\right)$
23.99	$p\sqrt{p}\;e^{-\alpha\sqrt{p}}$	$\dfrac{1}{2t}\chi(\alpha,t)\left[\dfrac{\alpha^2}{2t}-1\right]$, $\operatorname{Re}\alpha>0$
23.100	$p^2\sqrt{p}\;e^{-\alpha\sqrt{p}}$	$\dfrac{1}{4t^2}\chi(\alpha,t)\left[\dfrac{\alpha^4}{4t^2}-\dfrac{3\alpha^2}{2t}+3\right]$, $\operatorname{Re}\alpha>0$
23.101	$\dfrac{e^{-\sqrt{\alpha p}}}{\sqrt{p}}$	$2\sqrt{\dfrac{t}{\pi}}\exp\left(-\dfrac{\alpha}{4t}\right)-\sqrt{\alpha}\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}\right)$
23.102	$\dfrac{\sqrt{p}\;e^{-\sqrt{\alpha p}}}{p+a}$	$\dfrac{ie^{-at}}{2\sqrt{a}}\Big[\exp(i\sqrt{a\alpha})\times\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+i\sqrt{at}\right)-\exp(-i\sqrt{a\alpha})\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}-i\sqrt{at}\right)\Big]$
23.103	$\dfrac{p\sqrt{p}\;e^{-\sqrt{\alpha p}}}{p+a}$	$\dfrac{\sqrt{a}\,e^{-at}}{2i}\Big[\exp(i\sqrt{a\alpha})\times\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+i\sqrt{at}\right)-\exp(-i\sqrt{a\alpha})\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}-i\sqrt{at}\right)\Big]+\dfrac{1}{\sqrt{\pi t}}\exp\left(-\dfrac{\alpha}{4t}\right)$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.104	$p^{\frac{n+1}{2}}e^{-\alpha\sqrt{p}}$	$\dfrac{e^{-\frac{\alpha^2}{4t}}\,\mathrm{He}_n\left(\dfrac{\alpha}{2\sqrt{t}}\right)}{2^n\sqrt{\pi}\,t^{\frac{n+1}{2}}}$, $\operatorname{Re}\alpha>0$
23.105	$p^{\frac{\nu}{2}}e^{-\alpha\sqrt{p}}$	$\sqrt{\dfrac{2}{\pi}}(2t)^{-\frac{\nu}{2}}\exp\left(-\dfrac{\alpha^2}{8t}\right)\times$ $\times D_{\nu-1}\left(\dfrac{\alpha}{2\sqrt{t}}\right)$, $\operatorname{Re}\alpha>0$
23.106	$\dfrac{\exp(-\alpha\sqrt{p})}{a+\sqrt{p}}$	$\dfrac{1}{a}\operatorname{erfc}\left(\dfrac{\alpha}{2\sqrt{t}}\right)-$ $-\dfrac{1}{a}\exp(a\alpha+a^2t)\operatorname{erfc}\left(\dfrac{\alpha}{2\sqrt{t}}+\right.$ $\left.+a\sqrt{t}\right)$, $\operatorname{Re}\alpha\geqslant 0$
23.107	$\dfrac{\exp(-\sqrt{\alpha p})}{1+a\sqrt{ap}}-1$	$-\exp\left(\sqrt{\dfrac{\alpha}{a^3}}+\dfrac{t}{a^3}\right)\times$ $\times\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+\sqrt{\dfrac{t}{a^3}}\right)-$ $-\operatorname{erf}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}\right)$
23.108	$\dfrac{p\exp(-\alpha\sqrt{p})}{a+\sqrt{p}}$	$\chi(\alpha,t)-a\exp(a\alpha+a^2t)\times$ $\times\operatorname{erfc}\left(\dfrac{\alpha}{2\sqrt{t}}+a\sqrt{t}\right)$, $\operatorname{Re}\alpha\geqslant 0$
23.109	$\dfrac{p\exp(-\sqrt{\alpha p})}{1+a\sqrt{ap}}$	$\dfrac{\exp\left(-\dfrac{\alpha}{4t}\right)}{a\sqrt{a\pi t}}-$ $-\dfrac{\exp\left(\sqrt{\dfrac{\alpha}{a^3}}+\dfrac{t}{a^3}\right)}{a^3}\times$ $\times\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+\sqrt{\dfrac{t}{a^3}}\right)$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.110	$\dfrac{p^2\exp(-\sqrt{\alpha p})}{1+a\sqrt{ap}}$	$\left(\dfrac{\alpha}{4t^2}-\dfrac{\sqrt{\alpha}+\sqrt{a^3}}{2\sqrt{a^3}\,t}+\dfrac{1}{a^3}\right)\times$ $\times\dfrac{\exp\left(-\dfrac{\alpha}{4t}\right)}{a\sqrt{\pi t}}-\dfrac{1}{a^6}\exp\left(\sqrt{\dfrac{\alpha}{a^3}}+\dfrac{t}{a^3}\right)\times$ $\times\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+\sqrt{\dfrac{t}{a^3}}\right)$
23.111	$\dfrac{p^2\exp(-\sqrt{\alpha p})}{(p+b)(1+a\sqrt{ap})}$	$-\dfrac{be^{-bt}}{2}\left[\dfrac{\exp(i\sqrt{\alpha b})}{1-ia\sqrt{ab}}\times\right.$ $\times\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+i\sqrt{bt}\right)+$ $+\dfrac{\exp(-i\sqrt{\alpha b})}{1+ia\sqrt{ab}}\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}-\right.$ $\left.\left.-i\sqrt{bt}\right)\right]-\dfrac{1}{a^3(1+a^3b)}\times$ $\times\exp\left(\sqrt{\dfrac{\alpha}{a^3}}+\dfrac{t}{a^3}\right)\times$ $\times\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+\sqrt{\dfrac{t}{a^3}}\right)+$ $+\dfrac{\exp\left(-\dfrac{\alpha}{4t}\right)}{a\sqrt{a\pi t}}$
23.112	$\dfrac{\sqrt{p}\exp(-\sqrt{\alpha p})}{1+a\sqrt{ap}}$	$\dfrac{\exp\left(\sqrt{\dfrac{\alpha}{a^3}}+\dfrac{t}{a^3}\right)}{a\sqrt{a}}\times$ $\times\operatorname{erfc}\left(\sqrt{\dfrac{t}{a^3}}+\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}\right)$
23.113	$\dfrac{p\sqrt{p}\exp(-\sqrt{\alpha p})}{1+a\sqrt{ap}}$	$\left(\dfrac{\sqrt{\alpha}}{2t}-\dfrac{1}{a\sqrt{a}}\right)\dfrac{\exp\left(-\dfrac{\alpha}{4t}\right)}{a\sqrt{a\pi t}}+$ $+\dfrac{\exp\left(\sqrt{\dfrac{\alpha}{a^3}}+\dfrac{t}{a^3}\right)}{a\sqrt{a}}\times$ $\times\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+\sqrt{\dfrac{t}{a^3}}\right)$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.114	$\dfrac{\sqrt{p}\exp(-\sqrt{\alpha p})}{(p+b)(1+a\sqrt{ap})}$	$\dfrac{ie^{-bt}}{2\sqrt{b}}\left[\dfrac{\exp(i\sqrt{\alpha b})}{1-ia\sqrt{ab}}\times\right.$ $\times\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+i\sqrt{bt}\right)-$ $-\dfrac{\exp(-i\sqrt{\alpha b})}{1+ia\sqrt{ab}}\times$ $\left.\times\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}-i\sqrt{bt}\right)\right]+$ $+\dfrac{\sqrt{a^3}}{1+a^3b}\exp\left(\sqrt{\dfrac{\alpha}{a^3}}+\dfrac{t}{a^3}\right)\times$ $\times\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+\sqrt{\dfrac{t}{a^3}}\right)$
23.115	$\dfrac{p\sqrt{p}\exp(-\sqrt{\alpha p})}{(p+b)(1+a\sqrt{ap})}$	$\dfrac{\sqrt{b}\,e^{-bt}}{2i}\left[\dfrac{\exp(i\sqrt{\alpha b})}{1-ia\sqrt{ab}}\times\right.$ $\times\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+i\sqrt{bt}\right)-$ $-\dfrac{\exp(-i\sqrt{\alpha b})}{1+ia\sqrt{ab}}\times$ $\left.\times\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}-i\sqrt{bt}\right)\right]+$ $+\dfrac{\exp\left(\sqrt{\dfrac{\alpha}{a^3}}+\dfrac{t}{a^3}\right)}{a\sqrt{a}(1+a^3b)}\times$ $\times\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+\sqrt{\dfrac{t}{a^3}}\right)$
23.116	$\dfrac{\exp(-\alpha\sqrt{p})}{(a+\sqrt{p})^2}$	$\dfrac{1}{a^2}\operatorname{erfc}\left(\dfrac{\alpha}{2\sqrt{t}}\right)-\dfrac{2t}{a}\chi(\alpha,t)+$ $+\left(2t+\dfrac{\alpha}{a}-\dfrac{1}{a^2}\right)\exp(\alpha a+a^2t)\times$ $\times\operatorname{erfc}\left(\dfrac{\alpha}{2\sqrt{t}}+a\sqrt{t}\right)$, $\operatorname{Re}\alpha\geqslant 0$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.117	$\dfrac{p\exp(-\alpha\sqrt{p})}{(a+\sqrt{p})^2}$	$(2at^2+\alpha a+1)\exp(\alpha a+a^2t)\times$ $\times\operatorname{erfc}\left(\dfrac{\alpha}{2\sqrt{t}}+a\sqrt{t}\right)-$ $-2at\,\chi(\alpha,\ t),\quad \operatorname{Re}\alpha\geqslant 0$
23.118	$\dfrac{\sqrt{p}\exp(-\alpha\sqrt{p})}{(a+\sqrt{p})^2}$	$2t\,\chi(\alpha,\ t)-(2at+\alpha)\exp(\alpha a+a^2t)\times$ $\times\operatorname{erfc}\left(\dfrac{\alpha}{2\sqrt{t}}+a\sqrt{t}\right),\quad \operatorname{Re}\alpha\geqslant 0$
23.119	$\exp(-\sqrt{\alpha(p+\beta)})$	$\dfrac{1}{2}\left[e^{-\sqrt{\alpha\beta}}\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}-\right.\right.$ $\left.-\sqrt{\beta t}\right)+e^{\sqrt{\alpha\beta}}\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+\right.$ $\left.\left.+\sqrt{\beta t}\right)\right]$
23.120	$\exp(-\sqrt{\alpha(p+\beta)})-$ $-\exp(-\sqrt{\alpha\beta})$	$\dfrac{1}{2}\left[\exp(\sqrt{\alpha\beta})\operatorname{erfc}\left(\sqrt{\beta t}+\right.\right.$ $\left.+\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}\right)-\exp(-\sqrt{\alpha\beta})\times$ $\left.\times\operatorname{erfc}\left(\sqrt{\beta t}-\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}\right)\right]$
23.121	$p\exp(-\sqrt{\alpha(p+\beta)})$	$\dfrac{\sqrt{\alpha}}{2t\sqrt{\pi t}}\exp\left(-\beta t-\dfrac{\alpha}{4t}\right)$
22.122	$p(p+\beta)\exp(-\sqrt{\alpha(p+\beta)})$	$\left(\dfrac{\alpha}{2t}-3\right)\dfrac{1}{4}\sqrt{\dfrac{\alpha}{\pi t^5}}\times$ $\times\exp\left(-\beta t-\dfrac{\alpha}{4t}\right)$
23.123	$\dfrac{p\exp[-\sqrt{\alpha(p+a)}]}{p+a}$	$e^{-at}\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}\right)$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.124	$\dfrac{p\exp\left[-\sqrt{\alpha(p+\beta)}\right]}{p+a}$	$\dfrac{e^{-at}}{2}\left\{\exp\left[-\sqrt{\alpha(\beta-a)}\right]\times\operatorname{erfc}\left[\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}-\sqrt{(\beta-a)t}\right]+\exp\left[\sqrt{\alpha(\beta-a)}\right]\times\operatorname{erfc}\left[\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+\sqrt{(\beta-a)t}\right]\right\}$
23.125	$\dfrac{p(p+\beta)\exp\left[-\sqrt{\alpha(p+\beta)}\right]}{p+a}$	$\dfrac{(\beta-a)e^{-at}}{2}\left\{\exp\left[\sqrt{\alpha(\beta-a)}\right]\times\operatorname{erfc}\left[\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+\sqrt{(\beta-a)t}\right]+\exp\left[-\sqrt{\alpha(\beta-a)}\right]\times\operatorname{erfc}\left[\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}-\sqrt{(\beta-a)t}\right]\right\}+\dfrac{1}{2}\sqrt{\dfrac{\alpha}{\pi t^3}}\exp\left(-\beta t-\dfrac{\alpha}{4t}\right)$
23.126	$\dfrac{p\exp\left[-\sqrt{\alpha(p+a)}\right]}{(p+a)^2}$	$e^{-at}\left[\left(t+\dfrac{\alpha}{2}\right)\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}\right)-\sqrt{\dfrac{\alpha t}{\pi}}\exp\left(-\dfrac{\alpha}{4t}\right)\right]$
23.127	$\dfrac{p\exp\left[-\sqrt{\alpha(p+a)}\right]}{(p+a)(p+b)}$	$\dfrac{e^{-bt}}{2(a-b)}\left\{\exp\left[\sqrt{\alpha(a-b)}\right]\times\operatorname{erfc}\left[\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+\sqrt{(a-b)t}\right]+\exp\left[-\sqrt{\alpha(a-b)}\right]\times\operatorname{erfc}\left[\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}-\sqrt{(a-b)t}\right]\right\}-\dfrac{e^{-at}}{a-b}\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}\right)$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.128	$\sqrt{p}\exp[-\alpha\sqrt{p+\beta}]$	$\frac{1}{\sqrt{\pi t}}\exp\left(-\frac{\alpha^2}{4t}\right)-$ $-\frac{\alpha\beta}{\sqrt{\pi t}}\int\limits_{\alpha\beta}^{\infty}e^{-\frac{x^2}{4\beta^2 t}}\frac{J_1(\sqrt{x^2-\alpha^2\beta^2})}{\sqrt{x^2-\alpha^2\beta^2}}\,dx,$ $\alpha\geqslant 0$, β — действительное
23.129	$\sqrt{p+\beta}\exp[-\sqrt{\alpha(p+\beta)}]-$ $-\sqrt{\beta}\exp(-\sqrt{\alpha\beta})$	$\frac{1}{\sqrt{\pi t}}\exp\left(-\beta t-\frac{\alpha}{4t}\right)-$ $-\frac{\sqrt{\beta}}{2}\left[\exp(\sqrt{\alpha\beta})\operatorname{erfc}\left(\sqrt{\beta t}+\right.\right.$ $\left.+\frac{1}{2}\sqrt{\frac{\alpha}{t}}\right)+\exp(-\sqrt{\alpha\beta})\times$ $\left.\times\operatorname{erfc}\left(\sqrt{\beta t}-\frac{1}{2}\sqrt{\frac{\alpha}{t}}\right)\right]$
23.130	$p\sqrt{p+\beta}\exp[-\sqrt{\alpha(p+\beta)}]$	$\left(\frac{\alpha}{2t}-1\right)\frac{1}{2t\sqrt{\pi t}}\exp\left(-\beta t-\frac{\alpha}{4t}\right)$
23.131	$\frac{p\sqrt{p+\beta}\exp[-\sqrt{\alpha(p+\beta)}]}{p+a}$	$\frac{\sqrt{\beta-a}\,e^{-at}}{2}\left\{\exp[-\sqrt{\alpha(\beta-a)}]\times\right.$ $\times\operatorname{erfc}\left[\frac{1}{2}\sqrt{\frac{\alpha}{t}}-\sqrt{(\beta-a)t}\right]-$ $-\exp[\sqrt{\alpha(\beta-a)}]\times$ $\times\operatorname{erfc}\left[\frac{1}{2}\sqrt{\frac{\alpha}{t}}+\right.$ $\left.\left.+\sqrt{(\beta-a)t}\right]\right\}+$ $+\frac{1}{\sqrt{\pi t}}\exp\left(-\beta t-\frac{\alpha}{4t}\right)$
23.132	$\frac{\exp[-\sqrt{\alpha(p+a)}]}{\sqrt{p+a}}-\frac{\exp(-\sqrt{\alpha a})}{\sqrt{a}}$	$-\frac{1}{2\sqrt{a}}\left[\exp(\sqrt{a\alpha})\operatorname{erfc}\left(\sqrt{at}+\right.\right.$ $\left.+\frac{1}{2}\sqrt{\frac{\alpha}{t}}\right)+\exp(-\sqrt{a\alpha})\times$ $\left.\times\operatorname{erfc}\left(\sqrt{at}-\frac{1}{2}\sqrt{\frac{\alpha}{t}}\right)\right]$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.133	$\dfrac{p\exp\left[-\sqrt{\alpha(p+a)}\right]}{\sqrt{p+a}}$	$\dfrac{1}{\sqrt{\pi t}}\exp\left(-at-\dfrac{\alpha}{4t}\right)$
23.134	$\dfrac{p\left\{\exp\left[-\sqrt{\alpha(p+a)}\right]-1\right\}}{\sqrt{p+a}}$	$\dfrac{e^{-at}}{\sqrt{\pi t}}\left[\exp\left(-\dfrac{\alpha}{4t}\right)-1\right]$
23.135	$p\left\{\exp\left[-\sqrt{\alpha(p+a)}\right]-\right.$ $\left.-\exp\left[-\sqrt{\beta(p+a)}\right]\right\}\dfrac{1}{\sqrt{p+a}}$	$\dfrac{e^{-at}}{\sqrt{\pi t}}\left[\exp\left(-\dfrac{\alpha}{4t}\right)-\exp\left(-\dfrac{\beta}{4t}\right)\right]$
23.136	$\dfrac{p\exp\left[-\sqrt{\alpha(p+a)}\right]}{(p+a)\sqrt{p+a}}$	$e^{-at}\left[2\sqrt{\dfrac{t}{\pi}}\exp\left(-\dfrac{\alpha}{4t}\right)-\right.$ $\left.-\sqrt{\alpha}\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}\right)\right]$
23.137	$\left(\dfrac{1}{\sqrt{p+a}}-\dfrac{1}{\sqrt{a}}\right)\times$ $\times\exp\left[-\sqrt{\alpha(p+a)}\right]$	$-\dfrac{\exp\sqrt{a\alpha}}{\sqrt{a}}\operatorname{erfc}\left(\sqrt{at}+\right.$ $\left.+\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}\right),\quad a\neq 0$
23.138	$\dfrac{p\exp\left[-\sqrt{\alpha(p+a)}\right]}{(p+b)\sqrt{p+a}}$	$\dfrac{e^{-bt}}{2\sqrt{a-b}}\left\{\exp\left[-\sqrt{\alpha(a-b)}\right]\times\right.$ $\times\operatorname{erfc}\left[\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}-\sqrt{(a-b)t}\right]-$ $-\exp\left[\sqrt{\alpha(a-b)}\right]\times$ $\left.-\operatorname{erfc}\left[\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+\sqrt{(a-b)t}\right]\right\}$
23.139	$\dfrac{p\exp\left[-\sqrt{\alpha(p+a)}\right]}{b+\sqrt{p+a}}$	$e^{-at}\left[\dfrac{\exp\left(-\dfrac{\alpha}{4t}\right)}{\sqrt{\pi t}}-\right.$ $-b\exp\left(b\sqrt{\alpha}+b^2t\right)\times$ $\left.\times\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+b\sqrt{t}\right)\right]$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.140	$\dfrac{p(p+a)\exp[-\sqrt{\alpha(p+a)}]}{b+\sqrt{p+a}}$	$e^{-at}\left[\left(\dfrac{\alpha}{4t^2}-\dfrac{b\sqrt{\alpha}+1}{2t}+b^2\right)\times \times\dfrac{\exp\left(-\dfrac{\alpha}{4t}\right)}{\sqrt{\pi t}}- -b^3\exp(b\sqrt{\alpha}+b^2t)\times \times\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+b\sqrt{t}\right)\right]$
23.141	$\dfrac{p\exp[-\sqrt{\alpha(p+a)}]}{(p+a)[b+\sqrt{p+a}]}$	$\dfrac{e^{-at}}{b}\left[\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}\right)- -\exp(b\sqrt{\alpha}+b^2t)\times \times\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+b\sqrt{t}\right)\right]$
23.142	$\dfrac{p\exp[-\sqrt{\alpha(p+a)}]}{(p+c)(b+\sqrt{p+a})}$	$\dfrac{\exp[-\sqrt{\alpha(a-c)}-ct]}{2[b+\sqrt{a-c}]}\times \times\operatorname{erfc}\left[\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}-\sqrt{(a-c)t}\right]+ +\dfrac{\exp[\sqrt{\alpha(a-c)}-ct]}{2(b-\sqrt{a-c})}\times \times\operatorname{erfc}\left[\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+\sqrt{(a-c)t}\right]- -\dfrac{b\exp(b\sqrt{\alpha}+b^2t-at)}{b^2+c-a}\times \times\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+b\sqrt{t}\right)$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.143	$\dfrac{p(p+a)\exp\left[-\sqrt{\alpha(p+a)}\right]}{(p+c)\left(b+\sqrt{p+a}\right)}$	$\dfrac{(a-c)\,e^{-ct}}{2}\left\{\dfrac{\exp\left[\sqrt{\alpha(a-c)}\right]}{b-\sqrt{a-c}}\times\right.$ $\times\operatorname{erfc}\left[\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+\sqrt{(a-c)t}\right]+$ $+\dfrac{\exp\left[-\sqrt{\alpha(a-c)}\right]}{b+\sqrt{a-c}}\times$ $\times\operatorname{erfc}\left[\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}-\sqrt{(a-c)t}\right]-$ $-\dfrac{b^3\exp\left(b\sqrt{\alpha}+b^2t-at\right)}{b^2+c-a}\times$ $\times\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+b\sqrt{t}\right)+$ $\left.+\dfrac{1}{\sqrt{\pi t}}\exp\left(-at-\dfrac{\alpha}{4t}\right)\right\}$
23.144	$\dfrac{p\sqrt{p+a}\exp\left[-\sqrt{\alpha(p+a)}\right]}{b+\sqrt{p+a}}$	$\left(\dfrac{\sqrt{\alpha}}{2t}-b\right)\dfrac{\exp\left(-at-\dfrac{\alpha}{4t}\right)}{\sqrt{\pi t}}+$ $+b^2\exp\left(b\sqrt{\alpha}+b^2t-at\right)\times$ $\times\operatorname{erfc}\left(\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+b\sqrt{t}\right)$
23.145	$\dfrac{p\sqrt{p+a}\exp\left[-\sqrt{\alpha(p+a)}\right]}{(p+c)\left[b+\sqrt{p+a}\right]}$	$\dfrac{\sqrt{a-c}}{2}\,e^{-ct}\left\{\dfrac{\exp\left[-\sqrt{\alpha(a-c)}\right]}{b+\sqrt{a-c}}\times\right.$ $\times\operatorname{erfc}\left[\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}-\sqrt{(a-c)t}\right]-$ $-\dfrac{\exp\left[\sqrt{\alpha(a-c)}\right]}{b-\sqrt{a-c}}\times$ $\left.\times\operatorname{erfc}\left[\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+\sqrt{(a-c)t}\right]\right\}+$ $+\dfrac{b^2\exp\left(b\sqrt{\alpha}+b^2t-at\right)}{b^2+c-a}\times$ $\times\operatorname{erfc}\left[\dfrac{1}{2}\sqrt{\dfrac{\alpha}{t}}+b\sqrt{t}\right]$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.146	$\dfrac{p\exp[-\sqrt{\alpha(p+a)}]}{\sqrt{p+a}\,[b+\sqrt{p+a}]}$	$\exp(b\sqrt{\alpha}+b^2t-at)\times$ $\times\operatorname{erfc}\left(b\sqrt{t}+\frac{1}{2}\sqrt{\frac{\alpha}{t}}\right)$
23.147	$\dfrac{p\exp[-\sqrt{\alpha(p+a)}]}{\sqrt{(p+a)^3}\,[b+\sqrt{p+a}]}$	$\frac{e^{-at}}{b^2}[\exp(b\sqrt{\alpha}+b^2t)\times$ $\times\operatorname{erfc}\left(\frac{1}{2}\sqrt{\frac{\alpha}{t}}+b\sqrt{t}\right)-$ $-(1+b\sqrt{\alpha})\operatorname{erfc}\left(\frac{1}{2}\sqrt{\frac{\alpha}{t}}\right)+$ $+2b\sqrt{\frac{t}{\pi}}\exp\left(-\frac{\alpha}{4t}\right)]$
23.148	$\dfrac{p\exp[-\sqrt{\alpha(p+a)}]}{(p+c)\sqrt{p+a}\,(b+\sqrt{p+a})}$	$\frac{\exp[-\sqrt{\alpha(a-c)}-ct]}{2\sqrt{a-c}\,[b+\sqrt{a-c}]}\times$ $\times\operatorname{erfc}\left[\frac{1}{2}\sqrt{\frac{\alpha}{t}}-\sqrt{(a-c)t}\right]-$ $-\frac{\exp[\sqrt{\alpha(a-c)}-ct]}{2\sqrt{a-c}\,(b-\sqrt{a-c})}\times$ $\times\operatorname{erfc}\left[\frac{1}{2}\sqrt{\frac{\alpha}{t}}+\sqrt{(a-c)t}\right]+$ $+\frac{\exp[b\sqrt{\alpha}+b^2t-at]}{b^2+c-a}\times$ $\times\operatorname{erfc}\left(\frac{1}{2}\sqrt{\frac{\alpha}{t}}+b\sqrt{t}\right)$
23.149	$\sqrt{p}\exp\left(-\frac{\alpha}{\sqrt{p}}\right)$	$\int\limits_0^\infty\Psi(\tau,t)J_0(2\sqrt{\alpha\tau})\,d\tau$ $\operatorname{Re}\alpha>0$
23.150	$p^{-\frac{\nu}{2}}\exp\left(-\frac{\alpha}{\sqrt{p}}\right)$	$\frac{1}{\alpha^{\nu+1}\sqrt{\pi t}}\int\limits_0^\infty\exp\left(-\frac{x^2}{4\alpha^2t}\right)\times$ $\times J_\nu(2\sqrt{x})\,x^{\frac{\nu}{2}}\,dx$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.151	$p^{-\frac{n}{2}-\nu+1}\exp\left(-\frac{\alpha}{\sqrt{p}}\right)$	$\frac{t^{\frac{\nu}{2}}}{2^n\sqrt{\pi}}\int\limits_0^\infty \exp\left(-\frac{\alpha^2}{4x}\right)\times$ $\times \mathrm{He}_n\left(\frac{\alpha}{2\sqrt{x}}\right)\times$ $\times J_\nu(2\sqrt{tx})\,x^{-\frac{n+\nu+1}{2}}\,dx$
23.152	$p^{\frac{n-\nu}{2}}\exp\left(-\frac{\alpha}{\sqrt{p}}\right)$	$\frac{1}{2^n\sqrt{\pi}\,\alpha^{\frac{\nu}{2}}\,t^{\frac{n}{2}+1}}\int\limits_0^\infty \exp\left(-\frac{x^2}{4t}\right)\times$ $\times \mathrm{He}_n\left(\frac{x}{2\sqrt{t}}\right)\times$ $\times J_\nu(2\sqrt{\alpha x})\,x^{\frac{\nu}{2}}\,dx$
23.153	$\frac{p\exp(-\alpha\sqrt{p^2+a^2})}{p^2+a^2}$	0 при $t\leqslant\alpha$; $\int\limits_\alpha^t J_0[a(t-\tau)]\,J_0(a\sqrt{\tau^2-\alpha^2})\,d\tau$ при $t>\alpha$
23.154	$\frac{p\exp(-\alpha\sqrt{p^2-a^2})}{p^2-a^2}$	0 при $t<\alpha$; $\int\limits_\alpha^t I_0[a(t-\tau)]\,I_0(a\sqrt{\tau^2-\alpha^2})\,d\tau$ при $t>\alpha$
23.155	$\frac{p\exp(-\alpha\sqrt{p^2+a^2})}{\sqrt{p^2+a^2}}$	0 при $t<\alpha$; $J_0(a\sqrt{t^2-\alpha^2})$ при $t>\alpha$
23.156	$\frac{p\exp(-\alpha\sqrt{p^2+a^2})}{\sqrt{p^2+a^2}}$	$a\int\limits_t^\infty \frac{J_1(a\sqrt{\tau^2-\alpha^2})}{\sqrt{\tau^2-\alpha^2}}\tau\,d\tau$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.157	$\dfrac{p\exp\left(-\alpha\sqrt{p^2-a^2}\right)}{\sqrt{p^2-a^2}}$	0 при $t<\alpha$ $I_0\left(a\sqrt{t^2-\alpha^2}\right)$ при $t>\alpha$
23.158	$\dfrac{p\exp\left(-\alpha\sqrt{p^2-ia^2}\right)}{\sqrt{p^2-ia^2}}$	$\operatorname{ber}\left(a\sqrt{t^2-\alpha^2}\right)+i\operatorname{bei}\left(a\sqrt{t^2-\alpha^2}\right)$
23.159	$\dfrac{p\exp\left(-\alpha\sqrt{p^2+a^2}\right)}{p^2+a^2}\times$ $\times\left(\alpha+\dfrac{1}{\sqrt{p^2+a^2}}\right)$	0 при $t<\alpha$ $\dfrac{\sqrt{t^2-\alpha^2}}{a}J_1\left(a\sqrt{t^2-\alpha^2}\right)$ при $t>\alpha$
23.160	$\dfrac{p\exp\left(-\alpha\sqrt{p^2-a^2}\right)}{p^2-a^2}\times$ $\times\left(\alpha+\dfrac{1}{\sqrt{p^2-a^2}}\right)$	0 при $t<\alpha$ $\dfrac{\sqrt{t^2-\alpha^2}}{a}I_1\left(a\sqrt{t^2-\alpha^2}\right)$ при $t>\alpha$
23.161	$\dfrac{p\exp\left(-\alpha\sqrt{p^2-ia^2}+\frac{3}{4}\pi i\right)}{p^2-ia^2}\times$ $\times\left(\alpha+\dfrac{1}{\sqrt{p^2-ia^2}}\right)$	$\dfrac{\sqrt{t^2-\alpha^2}}{a}\left[\operatorname{ber}_1\left(a\sqrt{t^2-\alpha^2}\right)+\right.$ $\left.+i\operatorname{bei}_1\left(a\sqrt{t^2-\alpha^2}\right)\right]$
23.162	$\dfrac{p^2\exp\left(-\alpha\sqrt{p^2+a^2}\right)}{p^2+a^2}\times$ $\times\left(\alpha+\dfrac{1}{\sqrt{p^2+a^2}}\right)$	0 при $t<\alpha$ $tJ_0\left(a\sqrt{t^2-\alpha^2}\right)$ при $t>\alpha$
23.163	$\dfrac{p^2\exp\left(-\alpha\sqrt{p^2-a^2}\right)}{\sqrt{p^2-a^2}}\times$ $\times\left(\alpha+\dfrac{1}{\sqrt{p^2-a^2}}\right)$	0 при $t<\alpha$ $tI_0\left(a\sqrt{t^2-\alpha^2}\right)$ при $t>\alpha$
23.164	$\dfrac{p^2\exp\left(-\alpha\sqrt{p^2-ia^2}\right)}{\left(\sqrt{p^2-ia^2}\right)^2}\times$ $\times\left(\alpha+\dfrac{1}{\sqrt{p^2-ia^2}}\right)$	$t\left[\operatorname{ber}\left(a\sqrt{t^2-\alpha^2}\right)+\right.$ $\left.+\operatorname{bei}\left(a\sqrt{t^2-\alpha^2}\right)\right]$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.165	$\dfrac{p\exp(-\alpha\sqrt{p^2+a^2})\sqrt{\sqrt{p^2+a^2}+p}}{\sqrt{p^2+a^2}}$	0 при $t<\alpha$ $\sqrt{\dfrac{2}{\pi}}\dfrac{\cos(a\sqrt{t^2-\alpha^2})}{\sqrt{t+\alpha}}$ при $t>\alpha$
23.166	$\dfrac{p\exp(-\alpha\sqrt{p^2-a^2})\sqrt{\sqrt{p^2-a^2}+p}}{\sqrt{p^2-a^2}}$	0 при $t<\alpha$ $\sqrt{\dfrac{2}{\pi}}\dfrac{\operatorname{ch}(a\sqrt{t^2-\alpha^2})}{\sqrt{t+\alpha}}$ при $t>\alpha$
23.167	$\dfrac{p\exp(-\alpha\sqrt{p^2+a^2})\sqrt{\sqrt{p^2+a^2}-p}}{\sqrt{p^2+a^2}}$	0 при $t<\alpha$ $\sqrt{\dfrac{2}{\pi}}\dfrac{\sin(a\sqrt{t^2-\alpha^2})}{\sqrt{t+\alpha}}$ при $t>\alpha$
23.168	$\dfrac{p\exp(-\alpha\sqrt{p^2-a^2})\sqrt{\sqrt{p^2-a^2}-p}}{\sqrt{p^2-a^2}}$	0 при $t<\alpha$ $\sqrt{\dfrac{2}{\pi}}\dfrac{\operatorname{sh}(a\sqrt{t^2-\alpha^2})}{\sqrt{t+\alpha}}$ при $t>\alpha$
23.169	$\dfrac{p\exp(-\alpha\sqrt{p^2+a^2})}{\sqrt{p^2+a^2}\,(p+\sqrt{p^2+a^2})^\nu}$	0 при $t<\alpha$ $\dfrac{1}{a^\nu}\left(\dfrac{t-\alpha}{t+\alpha}\right)^{\frac{\nu}{2}}J_\nu(a\sqrt{t^2-\alpha^2})$ при $t>\alpha$ $\operatorname{Re}\nu>-1$
23.170	$\dfrac{p\exp(-\alpha\sqrt{p^2-a^2})}{\sqrt{p^2-a^2}\,(p+\sqrt{p^2-a^2})^\nu}$	0 при $t<\alpha$ $\dfrac{1}{a^\nu}\left(\dfrac{t-\alpha}{t+\alpha}\right)^{\frac{\nu}{2}}I_\nu(a\sqrt{t^2-\alpha^2})$ при $t>\alpha$ $\operatorname{Re}\nu>-1$
23.171	$\dfrac{p\exp\left(-\alpha\sqrt{p^2-ia^2}+\dfrac{3}{4}\nu\pi i\right)}{\sqrt{p^2-ia^2}\,(p+\sqrt{p^2-ia^2})^\nu}$	0 при $t<\alpha$ $\dfrac{1}{a^\nu}\left(\dfrac{t-\alpha}{t+\alpha}\right)^{\frac{\nu}{2}}[\operatorname{ber}_\nu(a\sqrt{t^2-\alpha^2})+$ $+i\operatorname{bei}_\nu(a\sqrt{t^2-\alpha^2})]$ при $t>\alpha$ $\operatorname{Re}\nu>-1$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.172	$\frac{p\exp(-\alpha\sqrt{p^2-a^2})}{\sqrt{p^2-a^2}}\times$ $\times[(p+\sqrt{p^2-a^2})^\nu-(p-\sqrt{p^2-a^2})^\nu]$	0 при $t<\alpha$ $\frac{2}{\pi}a^\nu\sin\nu\pi\left(\frac{t-\alpha}{t+\alpha}\right)^{\frac{\nu}{2}}\times$ $\times K_\nu(a\sqrt{t^2-\alpha^2})$ при $t>\alpha$ $-1<\operatorname{Re}\nu<1$
23.173	$\frac{p\exp(-\alpha\sqrt{p^2+a^2})}{\sqrt{p^2+a^2}}\times$ $\times\left[\operatorname{ctg}\pi\nu\frac{a^\nu}{(p+\sqrt{p^2+a^2})^\nu}-\right.$ $\left.-\frac{(p+\sqrt{p^2+a^2})^\nu}{\sin\nu\pi a^\nu}\right]$	0 при $0<t<\alpha$ $\left(\frac{t-\alpha}{t+\alpha}\right)^{\frac{\nu}{2}}Y_\nu(a\sqrt{t^2-\alpha^2})$ при $t>\alpha$
23.174	$\frac{p\exp(-\alpha\sqrt{p^2+a^2})}{\sqrt{p^2+a^2}}\times$ $\times\ln(p+\sqrt{p^2+a^2})$	0 при $t<\alpha$ $\ln aJ_0(a\sqrt{t^2-\alpha^2})-$ $-\frac{\pi}{2}Y_0(a\sqrt{t^2-\alpha^2})$ при $t>\alpha$
23.175	$\frac{p\exp(-\alpha\sqrt{p^2-a^2})}{\sqrt{p^2-a^2}}\times$ $\times\ln(p+\sqrt{p^2-a^2})$	0 при $t<\alpha$ $K_0(a\sqrt{t^2-\alpha^2})+$ $+\ln aI_0(a\sqrt{t^2-\alpha^2})$ при $t>\alpha$
23.176	$\frac{p\exp(-\alpha\sqrt{p^2-ia^2})}{\sqrt{p^2-ia^2}}\times$ $\times\ln\frac{p+\sqrt{p^2-ia^2}}{a\sqrt{i}}$	0 при $t<\alpha$ $\operatorname{ker}(a\sqrt{t^2-\alpha^2})+$ $+i\operatorname{kei}(a\sqrt{t^2-\alpha^2})$ при $t>\alpha$
23.177	$\frac{p^2}{p^2-a^2}\left\{\alpha-\frac{1}{\sqrt{p^2-a^2}}\right\}\times$ $\times\ln\frac{p+\sqrt{p^2-a^2}}{a}$	0 при $0<t<\alpha$ $-tK_0(a\sqrt{t^2-\alpha^2})-$ $-\int\limits_\alpha^t I_0[a(t-\delta)]I_0[a\sqrt{\delta^2-\alpha^2}]\,d\delta$ при $t>\alpha$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.178	$\exp\left(-\tau\sqrt{(p+2\alpha)(p+2\beta)}\right)$	0 при $t<\tau$ $e^{-\rho t}\{I_0(\sigma\sqrt{t^2-\tau^2})+$ $+\gamma_1[m^2(t-\tau),\ \sigma\sqrt{t^2-\tau^2}]+$ $+\gamma_2[m^2(t-\tau),\ \sigma\sqrt{t^2-\tau^2}]+$ $+\gamma_1[n^2(t-\tau),\ \sigma\sqrt{t^2-\tau^2}]+$ $+\gamma_2[n^2(t-\tau),\ \sigma\sqrt{t^2-\tau^2}]\}$ при $t>\tau$ $\rho=\alpha+\beta,\quad \sigma=\alpha-\beta,$ $m=\sqrt{\alpha}+\sqrt{\beta},\ n=\sqrt{\alpha}-\sqrt{\beta}$
23.179	$\exp\left(-\tau\sqrt{(p+2\alpha)(p+2\beta)}\right)$	0 при $t<\tau$ $e^{-\rho\tau}+\sigma\tau\int_\tau^t e^{-\rho\xi}\frac{I_1(\sigma\sqrt{\xi^2-\tau^2})}{\sqrt{\xi^2-\tau^2}}\,d\xi$ при $t>\tau$ $\rho=\alpha+\beta,\quad \sigma=\alpha-\beta$
23.180	$p\left\{\exp\left[-\tau\sqrt{(p+\alpha)(p+\beta)}\right]-\right.$ $\left.-\exp\left[\tau p-\frac{1}{2}\tau(p+\alpha)\right]\right\}$	0 при $0<t<\tau$ $\frac{\tau(\beta-\alpha)\exp\left(-\frac{\alpha+\beta}{2}t\right)}{2\sqrt{t^2-\tau^2}}\times$ $\times\frac{I_1\left[\frac{1}{2}(\beta-\alpha)\sqrt{t^2-\tau^2}\right]}{2\sqrt{t^2-\tau^2}}$ при $t>\tau$
23.181	$p\left\{\sqrt{\frac{p}{p+a}}\exp\left[-\tau\sqrt{p(p+a)}\right]-\right.$ $\left.-\exp\left(-\tau p-\frac{1}{2}\tau a\right)\right\}$	0 при $0<t<\tau$ $\frac{1}{2}a\exp\left(-\frac{at}{2}\right)\times$ $\times\left\{\frac{t}{\sqrt{t^2-\tau^2}}I_1\left[\frac{1}{2}a\sqrt{t^2-\tau^2}\right]-\right.$ $\left.-I_0\left[\frac{1}{2}a\sqrt{t^2-\tau^2}\right]\right\}$ при $t>\tau$; $a\neq 0$

№	$\overline{f}(p) = p\int\limits_0^\infty e^{-pt} f(t)\,dt$	$f(t)$
23.182	$\sqrt{\frac{p}{p+a}} \exp\left[-\tau\sqrt{p(p+a)}\right]$	0 при $0 < t < \tau$ $\exp\left(-\frac{at}{2}\right) I_0\left[\frac{1}{2} a \sqrt{t^2-\tau^2}\right]$ при $t > \tau,\quad a \neq 0$
23.183	$\frac{p\exp\left[-\tau\sqrt{(p+a)(p+b)}\right]}{\sqrt{(p+a)(p+b)}}$	0 при $t < \tau$ $\exp\left(-\frac{a+b}{2}t\right) I_0\left(\frac{a-b}{2}\sqrt{t^2-\tau^2}\right)$ при $t > \tau$
23.184	$\sqrt{\frac{p+\beta}{p+\alpha}} \exp\left[-\tau\sqrt{(p+\alpha)(p+\beta)}\right]$	0 при $t < \tau$ $\exp\left(-\frac{\alpha+\beta}{2}t\right) I_0\left(\frac{\alpha-\beta}{2}\sqrt{t^2-\tau^2}\right) +$ $+\beta\int\limits_\tau^t \exp\left(-\frac{\alpha+\beta}{2}s\right)\times$ $\times I_0\left(\frac{\alpha-\beta}{2}\sqrt{s^2-\tau^2}\right) ds$ при $t > \tau$
23.185	$\frac{p\exp\left[-\tau\sqrt{(p+a)(p+b)}\right]}{\sqrt{(p+a)(p+b)}\left[\sqrt{p+a}+\sqrt{p+b}\right]^2}$	0 при $0 < t < \tau$ $\frac{1}{b-a}\left(\sqrt{\frac{t-\tau}{t+\tau}}\right)\times$ $\times\exp\left(-\frac{a+b}{2}t\right)\times$ $\times I_1\left[\frac{1}{2}(b-a)(\sqrt{t^2-\tau^2}\right]$ при $t > \tau$
23.186	$\sqrt{\frac{p+2\beta}{p+2\alpha}}\times$ $\times\exp\left(-\tau\sqrt{(p+2\alpha)(p+2\beta)}\right)$	0 при $t < \tau$ $\sqrt{\frac{G}{R}} e^{-\rho t}\times$ $\times\left\{\sqrt{\frac{\alpha}{\beta}} I_0\left(\sigma\sqrt{t^2-\tau^2}\right) +\right.$ $+\gamma_1\left[m^2(t-\tau),\quad \sigma\sqrt{t^2-\tau^2}\right] +$ $+\gamma_2\left[m^2(t-\tau),\quad \sigma\sqrt{t^2-\tau^2}\right] -$ $-\gamma_1\left[n^2(t-\tau),\quad \sigma\sqrt{t^2-\tau^2}\right] -$ $\left.-\gamma_2\left[n^2(t-\tau),\quad \sigma\sqrt{t^2-\tau^2}\right]\right\}$ при $t > \tau$, $\alpha = \frac{R}{2L},\quad \beta = \frac{G}{\diagdown},$ $\rho = \alpha+\beta,\quad \sigma = \alpha-\beta,$ $m = \sqrt{\alpha}+\sqrt{\beta},\quad n = \sqrt{\alpha}-\sqrt{\beta}$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.187	$p\left\{\left(\sqrt{\frac{p+\alpha}{p+a}}\right)\times \times\exp\left[-\tau\sqrt{(p+\alpha)(p+a)}\right]- -\exp\left[-\tau p-\frac{1}{2}\tau(\alpha+a)\right]\right\}$	0 при $0<t<\tau$; $\frac{\alpha-a}{2}\exp\left(-\frac{\alpha+a}{2}t\right)\left\{\frac{t}{\sqrt{t^2-\tau^2}}\times \times I_1\left[\frac{\alpha-a}{2}\sqrt{t^2-\tau^2}\right]+ +I_0\left[\frac{\alpha-a}{2}\sqrt{t^2-\tau^2}\right]\right\}$ при $t>\tau$
23.188	$p\sqrt{\frac{p+b}{p+a}}\times \times\frac{\exp\left[-\tau\sqrt{(p+a)(p+b)}\right]}{\left[\sqrt{p+a}+\sqrt{p+b}\right]^{2\nu}}$	0 при $0<t<\tau$; $\frac{1}{4(b-a)^{\nu-1}}\left(\frac{t-\tau}{t+\tau}\right)^{\frac{\nu-1}{2}}\times \times\exp\left(-\frac{a+b}{2}t\right)\times \times\left\{I_{\nu-1}\left[\frac{b-a}{2}\sqrt{t^2-\tau^2}\right]+ +2\sqrt{\frac{t-\tau}{t+\tau}}I_\nu\left[\frac{b-a}{2}\sqrt{t^2-\tau^2}\right]+ +\left(\frac{t-\tau}{t+\tau}\right)I_{\nu+1}\left[\frac{b-a}{2}\sqrt{t^2-\tau^2}\right]\right\}$ при $t>\tau$
23.189	$\frac{p}{\sqrt{(p+a)(p+b)}}\times \times\frac{\exp\left[-\tau\sqrt{(p+a)(p+b)}\right]}{\left[\sqrt{p+a}+\sqrt{p+b}\right]^{2\nu-2}}$	0 при $0<t<\tau$; $\frac{1}{(b-a)^{\nu-1}}\left(\frac{t-\tau}{t+\tau}\right)^{\frac{\nu-1}{2}}\times \times\exp\left(\frac{a+b}{2}t\right)\times \times I_{\nu-1}\left[\frac{1}{2}(b-a)\sqrt{t^2-\tau^2}\right]$ при $t>\tau$
23.190	$p\left\{\exp\left[\tau\left(\sqrt{p+b}-\sqrt{p+a}\right)^2\right]-1\right\}$	$\frac{\tau(b-a)}{\sqrt{t(t+4\tau)}}\exp\left(-\frac{a+b}{2}t\right)\times \times I_1\left[\frac{1}{2}(b-a)\sqrt{t(t+4\tau)}\right]$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.191	$\frac{p}{\sqrt{(p+a)(p+b)}}\times$ $\times\frac{\exp[\tau(\sqrt{p+b}-\sqrt{p+a})^2]}{(\sqrt{p+a}+\sqrt{p+b})^{2\nu}}$	$\frac{t^{\frac{\nu}{2}}\exp\left(-\frac{a+b}{2}t\right)}{(b-a)^\nu}\times$ $\times\frac{I_\nu\left[\frac{1}{2}(b-a)\sqrt{t(t+4\tau)}\right]}{(\sqrt{t+4\tau})^\nu}$ $\operatorname{Re}\nu>-1$
23.192	$p\,[\exp(-\beta p)-\exp(-\beta\sqrt{p^2+\alpha^2})]$	0 при $t<\beta$ $\frac{\alpha\beta}{\sqrt{t^2-\beta^2}}J_1(\alpha\sqrt{t^2-\beta^2})$ при $t>\beta$
23.193	$\exp(-b\sqrt{p^2-a^2})-\exp(-bp)$	0 при $t<b$ $ab\int_b^t\frac{I_1(a\sqrt{t^2-b^2})}{\sqrt{t^2-b^2}}\,dt$ при $t>b$
23.194	$\exp(-bp)-\exp(-b\sqrt{p^2+a^2})$	0 при $t<b$ $ab\int_b^t\frac{J_1(a\sqrt{t^2-b^2})}{\sqrt{t^2-b^2}}\,dt$ при $t>b$
23.195	$p[\exp(-\alpha\sqrt{p^2+\beta^2})-\exp(-\alpha p)]$	0 при $0<t<\alpha$ $-\alpha\beta\frac{J_1(\beta\sqrt{t^2-\alpha^2})}{\sqrt{t^2-\alpha^2}}$ при $t>\alpha$
23.196	$p[\exp(-\beta\sqrt{p^2-\alpha^2})-\exp(-\beta p)]$	0 при $t<\beta$ $\frac{\alpha\beta}{\sqrt{t^2-\beta^2}}I_1(\alpha\sqrt{t^2-\beta^2})$ при $t>\beta$
23.197	$p\exp\left(-\frac{3}{4}\pi i\right)(e^{-\alpha p}-$ $-e^{-\alpha\sqrt{p^2-\alpha^2 i}})$	0 при $0<t<\alpha$ $\alpha\beta\left[\frac{\operatorname{ber}_1(\alpha\sqrt{t^2-\alpha^2})}{\sqrt{t^2-\alpha^2}}+\right.$ $\left.+\frac{i\operatorname{bei}_1(\alpha\sqrt{t^2-\alpha^2})}{\sqrt{t^2-\alpha^2}}\right]$ при $t>\alpha$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.198	$\frac{p}{\sqrt{p^2-a^2}}\exp(-\alpha\sqrt{p^2-a^2})-$ $-\exp(p-\alpha)$	0 при $t<\alpha$ $a\int\limits_\alpha^t \frac{I_1(a\sqrt{t^2-\alpha^2})}{\sqrt{t^2-\alpha^2}}t\,dt$ при $t>\alpha$
23.199	$\exp(-\alpha p)-\frac{p}{\sqrt{p^2+a^2}}e^{-\alpha\sqrt{p^2+a^2}}$	0 при $t<\alpha$ $a\int\limits_\alpha^t \frac{J_1(a\sqrt{t^2-\alpha^2})}{\sqrt{t^2-\alpha^2}}t\,dt$ при $t>\alpha$
23.200	$p\left[\exp(-\alpha p)-\right.$ $\left.-\frac{p\exp(-\alpha\sqrt{p^2+a^2})}{\sqrt{p^2+a^2}}\right]$	0 при $t<\alpha$ $\frac{at}{\sqrt{t^2-\alpha^2}}J_1(a\sqrt{t^2-\alpha^2})$ при $t>\alpha$
23.201	$p\left[\frac{p\exp(-\alpha\sqrt{p^2-a^2})}{\sqrt{p^2-a^2}}-\right.$ $\left.-\exp(-\alpha p)\right]$	0 при $t<\alpha$ $\frac{at}{\sqrt{t^2-\alpha^2}}I_1(a\sqrt{t^2-\alpha^2})$ при $t>\alpha$
23.202	$p\exp\left(-\frac{3}{4}\pi i\right)\left[\exp(-\alpha p)-\right.$ $\left.-p\frac{\exp(-\alpha\sqrt{p^2-ia^2})}{\sqrt{p^2-ia^2}}\right]$	0 при $t<\alpha$ $at\left[\frac{\mathrm{ber}_1(a\sqrt{t^2-\alpha^2})}{\sqrt{t^2-\alpha^2}}+\right.$ $\left.+\frac{i\,\mathrm{bei}_1(a\sqrt{t^2-\alpha^2})}{\sqrt{t^2-\alpha^2}}\right]$ при $t>\alpha$
23.203	$\exp(-b\sqrt{p^2+a^2})-\exp[-b(p+a)]$	0 при $t<b$ $ab\int\limits_t^\infty \frac{J_1(a\sqrt{t^2-b^2})}{\sqrt{t^2-b^2}}dt$ при $t>b$
23.204	$\exp(-b\sqrt{(p+c)^2+a^2})-$ $-\exp[-b(p+\sqrt{a^2+c^2})]$	0 при $t<b$ $ab\int\limits_t^\infty e^{-ct}\frac{J_1(a\sqrt{t^2-b^2})\,dt}{\sqrt{t^2-b^2}}$ при $t>b$
23.205	$e^{-bp}-e^{-b\sqrt{(p+2a)\,p}}$	0 при $t<b$ $ab\int\limits_t^\infty e^{-at}\frac{I_1(a\sqrt{t^2-b^2})}{\sqrt{t^2-b^2}}dt$ при $t>b$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.206	$e^{-b\sqrt{(p+2a)\,p}}-e^{-b(p+a)}$	0 при $t<b$ $ab\int\limits_b^t e^{-at}\dfrac{I_1(a\sqrt{t^2-b^2})}{\sqrt{t^2-b^2}}\,dt$ при $t>b$
23.207	$\exp[-c\sqrt{(p+2a)(p+2b)}]-$ $-\exp[-c(p+a)]$	0 при $t<c$ $\beta c\int\limits_c^t e^{-\alpha t}\dfrac{I_1(\beta\sqrt{t^2-c^2})}{\sqrt{t^2-c^2}}\,dt$ при $t>c$ $\alpha=a+b,\quad\beta=a-b$
23.208	$\exp[-c(p+2\sqrt{ab})]-$ $-\exp[-c\sqrt{(p+2a)(p+2b)}]$	0 при $t<c$ $\beta c\int\limits_t^\infty e^{-\alpha t}\dfrac{I_1(\beta\sqrt{t^2-c^2})}{\sqrt{t^2-c^2}}\,dt$ при $t>c$ $\alpha=a+b,\quad\beta=a-b$
23.209	$\dfrac{1}{p^\nu}\exp\left(-\dfrac{\sqrt{p^2+1}}{bp}\right)$	$\left(\dfrac{t}{b}\right)^{\frac{\nu}{2}}\Big\{J_\nu(2\sqrt{bt})-$ $-b\int\limits_b^\infty\dfrac{J_\nu(2\sqrt{tx})\,J_1(\sqrt{x^2-b^2})\,dx}{\sqrt{x^2-b^2}}\Big\}$
23.210	$p\,[1-e^{\beta\,(p-\sqrt{p^2+\alpha^2})}]$	$\dfrac{\alpha\beta\,J_1(\alpha\sqrt{t^2+2\beta t})}{\sqrt{t^2+2\beta t}}$
23.211	$p\,[1-e^{\beta\,(p-\sqrt{p^2-\alpha^2})}]$	$-\dfrac{\alpha\beta\,I_1(\alpha\sqrt{t^2+2\beta t})}{\sqrt{t^2+2\beta t}}$
23.212	$\dfrac{p}{\sqrt{p^2+a^2}}\exp[\alpha(p-\sqrt{p^2+a^2})]$	$J_0(a\sqrt{t^2+2\alpha t}),\quad a>0$
23.213	$\dfrac{p}{\sqrt{p^2-a^2}}\exp[\alpha(p-\sqrt{p^2-a^2})]$	$I_0(a\sqrt{t^2+2\alpha t}),\quad a>0$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.214	$p-\frac{p^2}{\sqrt{p^2+a^2}}\exp[\alpha(p-\sqrt{p^2+a^2})]$	$\frac{a(t+\alpha)}{\sqrt{t^2+2\alpha t}}J_1(a\sqrt{t^2+2\alpha t}),\quad a>0$
23.215	$p-\frac{p^2}{\sqrt{p^2-a^2}}\exp[\alpha(p-\sqrt{p^2-a^2})]$	$-\frac{a(t+\alpha)}{\sqrt{t^2+2\alpha t}}I_1(a\sqrt{t^2+2\alpha t}),\ a>0$
23.216	$\frac{pe^{\alpha(p-\sqrt{p^2+a^2})}\sqrt{\sqrt{p^2+a^2}+p}}{\sqrt{p^2+a^2}}$	$\sqrt{\frac{2}{\pi}}\frac{\cos(a\sqrt{t^2+2\alpha t})}{\sqrt{t+2\alpha}}$
23.217	$\frac{pe^{\alpha(p-\sqrt{p^2-a^2})}\sqrt{\sqrt{p^2-a^2}+p}}{\sqrt{p^2-a^2}}$	$\sqrt{\frac{2}{\pi}}\frac{\operatorname{ch}(a\sqrt{t^2+2\alpha t})}{\sqrt{t+2\alpha}}$
23.218	$\frac{pe^{\alpha(p-\sqrt{p^2+a^2})}\sqrt{\sqrt{p^2+a^2}-p}}{\sqrt{p^2+a^2}}$	$\sqrt{\frac{2}{\pi}}\frac{\sin(a\sqrt{t^2+2\alpha t})}{\sqrt{t+2\alpha}}$
23.219	$\frac{pe^{\alpha(p-\sqrt{p^2-a^2})}\sqrt{\sqrt{p^2-a^2}-p}}{\sqrt{p^2-a^2}}$	$\sqrt{\frac{2}{\pi}}\frac{\operatorname{sh}(a\sqrt{t^2+2\alpha t})}{\sqrt{t+2\alpha}}$
23.220	$\frac{p\exp[\alpha(p-\sqrt{p^2+a^2})]}{\sqrt{(p^2+a^2)}(p+\sqrt{p^2+a^2})^\nu}$	$\frac{t^{\frac{\nu}{2}}J_\nu(a\sqrt{t^2+2\alpha t})}{a^\nu(t+2\alpha)^{\frac{\nu}{2}}}$ $\operatorname{Re}\nu>-1,\ a>0$
23.221	$\frac{p\exp[\alpha(p-\sqrt{p^2-a^2})]}{\sqrt{(p^2-a^2)}(p+\sqrt{p^2-a^2})^\nu}$	$\frac{t^{\frac{\nu}{2}}I_\nu(a\sqrt{t^2+2\alpha t})}{a^\nu(t+2\alpha)^{\frac{\nu}{2}}}$ $\operatorname{Re}\nu>-1,\ a>0$
23.222	$\frac{p}{\sqrt{p^2+a^2}}\exp[\alpha(p-\sqrt{p^2+a^2})]\times$ $\times\ln(p+\sqrt{p^2+a^2})$	$\ln a\,J_0(a\sqrt{t^2+2\alpha t})-$ $-\frac{\pi}{2}Y_0(a\sqrt{t^2+2\alpha t}),\ a>0$
23.223	$\frac{p\exp[\alpha(p-\sqrt{(p+a)(p+b)})]}{\sqrt{(p+a)(p+b)}}$	$\exp\left[-\frac{a+b}{2}(t+\alpha)\right]\times$ $\times I_0\left[\left(\frac{a-b}{2}\right)\sqrt{t^2+2bt}\right]$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
23.224	$\sqrt[3]{p}\;s_1(-\sqrt[3]{p})$	$\frac{1}{\sqrt{3t}}J_{-\frac{1}{3}}\left(\frac{2}{3\sqrt{3t}}\right)$
23.225	$\sqrt[3]{p}\;s_3(-\sqrt[3]{p})$	$\frac{1}{\sqrt{3t}}J_{\frac{1}{3}}\left(\frac{2}{3\sqrt{3t}}\right)$
23.226	$\frac{p^2}{p^2+b^2}\exp(-\sqrt{ap})$	$\exp\left(-\sqrt{\frac{ab}{2}}\right)\times$ $\times\cos\left[bt-\sqrt{\frac{ab}{2}}\right]-$ $-\frac{1}{\pi}\int\limits_0^\infty e^{-ut}\sin(\sqrt{au})\frac{u\,du}{u^2+b^2}$ $\operatorname{Re}a\geqslant 0,\quad \operatorname{Re}b\geqslant 0$
23.227	$\frac{p}{\sqrt{(p+a)(p+b)}}\times$ $\times\frac{\exp[-\alpha\sqrt{(p+a)(p+b)}]}{\left[p+\frac{a+b}{2}+\sqrt{(p+a)(p+b)}\right]^\nu}$	0 при $0<t<\alpha$ $\left(\frac{2}{a-b}\right)^\nu\left(\frac{t-\alpha}{t+\alpha}\right)^{\frac{\nu}{2}}\times$ $\times\exp\left[-\frac{a+b}{2}t\right]\times$ $\times I_\nu\left(\frac{a-b}{2}\sqrt{t^2-\alpha^2}\right)$ при $t>\alpha$ $\operatorname{Re}\nu>-1,\ \alpha>0$
23.228	$\frac{p}{\sqrt{(p+a)(p+b)}}\times$ $\times\frac{\exp[cp-c\sqrt{(p+a)(p+b)}]}{\left[p+\frac{a+b}{2}+\sqrt{(p+a)(p+b)}\right]^\nu}$	$\left(\frac{2}{a-b}\right)^\nu\frac{t^{\frac{\nu}{2}}}{(t+2c)^{\frac{\nu}{2}}}\times$ $\times\exp\left[-\frac{a+b}{2}(t+c)\right]\times$ $\times I_\nu\left[\frac{a-b}{2}\sqrt{t^2+2ct}\right]$, $\operatorname{Re}\nu>-1$

§ 24. Тригонометрические и гиперболические функции

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
24.1	$\cos\frac{1}{p}$	$\operatorname{ber}(2\sqrt{t})$
24.2	$\sqrt{p}\cos\frac{1}{p}$	$\frac{\operatorname{ch}(\sqrt{2t})\cos(\sqrt{2t})}{\sqrt{\pi t}}$
24.3	$\frac{1}{p^\nu}\cos\frac{1}{p}$	$t^{\frac{\nu}{2}}\left[\cos\frac{3\nu\pi}{4}\operatorname{ber}_\nu(2\sqrt{t})+\right.$ $\left.+\sin\frac{3\nu\pi}{4}\operatorname{bei}_\nu(2\sqrt{t})\right]$, $\operatorname{Re}\nu>-1$
24.4	$\frac{1}{p^\nu}\cos\left(\frac{1}{p}+\frac{3\nu\pi}{4}\right)$	$t^{\frac{\nu}{2}}\operatorname{ber}_\nu(2\sqrt{t})$, $\operatorname{Re}\nu>-1$
24.5	$\cos\frac{1}{\sqrt{p}}$	$\sqrt{\frac{\pi}{2}}(2t)^{\frac{1}{6}}J^{(2)}_{0,\,-\frac{1}{2}}\left(3\sqrt[3]{\frac{t}{4}}\right)=$ $=\frac{1}{\sqrt{\pi t}}\int\limits_0^\infty e^{-\frac{x^2}{4t}}\operatorname{ber}(2\sqrt{x})\,dx$
24.6	$\frac{1}{p^\nu}\cos\frac{1}{\sqrt{p}}$	$\sqrt{\frac{\pi}{2}}(2t)^{\frac{2\nu}{3}+\frac{1}{6}}\times$ $\times J^{(2)}_{\nu,\,-\frac{1}{2}}\left(3\sqrt[3]{\frac{t}{4}}\right)$, $\operatorname{Re}\nu>-1$
24.7	$e^{-\alpha\sqrt{p}}\cos\alpha\sqrt{p}$	$1-C\left(\frac{\alpha^2}{2t}\right)-S\left(\frac{\alpha^2}{2t}\right)$
24.8	$\sqrt{p}\,e^{-\sqrt{\alpha p}}\cos\sqrt{\alpha p}$	$\frac{1}{\sqrt{\pi t}}\cos\left(\frac{\alpha}{2t}\right)$
24.9	$\frac{p}{\sqrt{p^2+a^2}}\cos\left(\alpha+\operatorname{arctg}\frac{a}{p}\right)$	$\cos(at+\alpha)$
24.10	$\frac{p\cos\left[(\alpha+1)\operatorname{arctg}\frac{a}{p}\right]}{(\sqrt{p^2+a^2})^{\alpha+1}}$	$\frac{t^\alpha\cos at}{\Gamma(\alpha+1)}$, $\alpha>-1$

№	$\bar f(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
24.11	$\frac{1}{p^\mu}\cos\frac{1}{\sqrt{ap}}$	$\frac{t^\mu}{\Gamma(\mu+1)}\,{}_0F_2\left(\mu+1,\ \frac{1}{2};\ -\frac{t}{4a}\right)$ $\operatorname{Re}\mu>-1$
24.12	$\frac{1}{p^{\nu-1}}\cos\left[2n\arcsin\frac{1}{\sqrt{p}}\right]$	$\frac{t^{\nu-1}}{\Gamma(\nu)}\,{}_2F_2\left(-n,\ n;\ \nu,\ \frac{1}{2};\ t\right)$ $\operatorname{Re}\nu>0$
24.13	$\sin\frac{1}{p}$	$\operatorname{bei}(2\sqrt{t})$
24.14	$\sqrt{p}\sin\frac{1}{p}$	$\frac{\operatorname{sh}(\sqrt{2t})\sin(\sqrt{2t})}{\sqrt{\pi t}}$
24.15	$\frac{1}{p^\nu}\sin\frac{1}{p}$	$t^{\frac{\nu}{2}}\left[\cos\frac{3\nu\pi}{4}\operatorname{bei}_\nu(2\sqrt{t})-\sin\frac{3\nu\pi}{4}\operatorname{ber}_\nu(2\sqrt{t})\right]$, $\operatorname{Re}\nu>-2$
24.16	$\frac{1}{p^\nu}\sin\left(\frac{1}{p}+\frac{3\nu\pi}{4}\right)$	$t^{\frac{\nu}{2}}\operatorname{bei}_\nu(2\sqrt{t})$, $\operatorname{Re}\nu>-1$
24.17	$\sin\frac{1}{\sqrt{p}}$	$\sqrt{\frac{\pi}{2}}(2t)^{\frac{1}{6}}J^{(2)}_{\frac{1}{2},\frac{1}{2}}\left(3\sqrt[3]{\frac{t}{4}}\right)$
24.18	$\frac{1}{p^{\nu-\frac{1}{2}}}\sin\frac{1}{\sqrt{p}}$	$\sqrt{\frac{\pi}{2}}(2t)^{\frac{2\nu}{3}-\frac{1}{6}}J^{(2)}_{\nu,\frac{1}{2}}\left(3\sqrt[3]{\frac{t}{4}}\right)$ $\operatorname{Re}\nu>-1$
24.19	$\sqrt{p}\,e^{-\sqrt{ap}}\sin\sqrt{ap}$	$\frac{1}{\sqrt{\pi t}}\sin\left(\frac{a}{2t}\right)$
24.20	$\frac{p\sin\left(\alpha+\operatorname{arctg}\frac{a}{p}\right)}{\sqrt{p^2+a^2}}$	$\sin(at+\alpha)$
24.21	$\frac{p\sin\left[(\alpha+1)\operatorname{arctg}\frac{a}{p}\right]}{(\sqrt{p^2+a^2})^{\alpha+1}}$	$\frac{t^\alpha\sin at}{\Gamma(\alpha+1)}$, $\alpha>-1$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
24.22	$\dfrac{1}{p^{\mu-\frac{1}{2}}}\sin\dfrac{1}{\sqrt{ap}}$	$\dfrac{1}{\sqrt{a}\,\Gamma(\mu+1)}t^{\mu}{}_0F_2\left(\mu+1,\ \dfrac{3}{2};\ -\dfrac{t}{4a}\right),\quad \mathrm{Re}\,\mu>-1$
24.23	$\dfrac{\sin\left[(2n+1)\arcsin\dfrac{1}{\sqrt{p}}\right]}{p^{\nu-1}}$	$\dfrac{2n+1}{\Gamma\left(\nu+\dfrac{1}{2}\right)}t^{\nu-\frac{1}{2}}{}_2F_2\left(-n,\ n;\ \nu+\dfrac{1}{2},\ \dfrac{3}{2};\ t\right),\quad \mathrm{Re}\,\nu>-\dfrac{1}{2}$
24.24	$\dfrac{1}{\sqrt{p}}\cos\dfrac{a}{p}$	$\dfrac{1}{\sqrt{\pi a}}\,\mathrm{sh}\,(\sqrt{2at})\cos(\sqrt{2at})$
24.25	$\dfrac{1}{\sqrt{p}}\sin\dfrac{a}{p}$	$\dfrac{1}{\sqrt{\pi a}}\,\mathrm{ch}\,(\sqrt{2at})\sin(\sqrt{2at})$
24.26	$\mathrm{ch}\,\dfrac{1}{p}$	$\dfrac{1}{2}[J_0(2\sqrt{t})+I_0(2\sqrt{t})]$
24.27	$\sqrt{p}\,\mathrm{ch}\,\dfrac{1}{p}$	$\dfrac{\mathrm{ch}\,(2\sqrt{t})+\cos(2\sqrt{t})}{2\sqrt{\pi t}}$
24.28	$\dfrac{1}{\sqrt{p}}\,\mathrm{ch}\,\dfrac{1}{p}$	$\dfrac{1}{2\sqrt{\pi}}[\mathrm{sh}(2\sqrt{t})+\sin(2\sqrt{t})]$
24.29	$\dfrac{1}{p^{\nu}}\,\mathrm{ch}\,\dfrac{1}{p}$	$\dfrac{1}{2}t^{\frac{\nu}{2}}[J_\nu(2\sqrt{t})+I_\nu(2\sqrt{t})]$ $\mathrm{Re}\,\nu>-1$
24.30	$\sqrt{p}\exp\left(-\dfrac{\alpha^2+\beta^2}{4p}\right)\mathrm{ch}\left(\dfrac{\alpha\beta}{2p}\right)$	$\dfrac{\cos(\alpha\sqrt{t})\cos(\beta\sqrt{t})}{\sqrt{\pi t}}$
24.31	$\dfrac{1}{\mathrm{ch}\,ap}$	2 при $(4k-3)a<t<(4k-1)a$ 0 в остальных случаях $k=1,\ 2,\ \ldots;\ a>0$
24.32	$1-\dfrac{1}{\mathrm{ch}\,ap}$	1 при $(4k-5)a<t<(4k-3)a$ -1 при $(4k-3)a<t<(4k-1)a$ $k=1,\ 2,\ \ldots;\ a>0$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
24.33	$\dfrac{1}{p\,\mathrm{ch}\,ap}$	$2[t-(2k-1)a]$ при $(4k-3)a<t<(4k-1)a$ $4ka$ при $(4k-1)a<t<(4k+1)a$ $k=0,\ 1,\ 2,\ \ldots;\ a>0$
24.34	$\dfrac{p}{(p+b)\,\mathrm{ch}\,[a(p+b)]}$	$2e^{-bt}$ при $(4k-3)a<t<(4k-1)a$ 0 в остальных случаях $k=1,\ 2,\ 3,\ \ldots;\ a>0$
24.35	$\dfrac{p}{(p+b)^2\,\mathrm{ch}\,[a(p+b)]}$	$[t-(-1)^k(t-2ak)]\,e^{-bt}$ при $(2k-1)a<t<(2k+1)a$ 0 в остальных случаях $k=1,\ 2,\ 3,\ \ldots;\ a>0$
24.36	$\dfrac{\mathrm{ch}\,ap}{\mathrm{ch}\,2ap}$	1 при $(4k-3)a<t<(4k-1)a$ 2 при $(8k-5)a<t<(8k-3)a$ 0 в остальных случаях $k=1,\ 2,\ 3,\ \ldots;\ a>0$
24.37	$\dfrac{1}{\mathrm{ch}\,\sqrt{p}}$	$-\int_0^1 \vartheta_1\left(\dfrac{u}{2},\ t\right)du+1$
24.38	$\dfrac{p}{\mathrm{ch}\,\sqrt{p}}$	$\left[\dfrac{\partial}{\partial v}\,\vartheta_1\left(\dfrac{v}{2},\ t\right)\right]_{v=0}$
24.39	$\dfrac{\sqrt{p}}{\mathrm{ch}\,\sqrt{p}}$	$\hat{\vartheta}_2\left(\dfrac{1}{2},\ t\right)=$ $=-\dfrac{2}{\sqrt{\pi t}}\sum_{k=1}^{\infty}(-1)^k e^{-\frac{1}{t}\left(k-\frac{1}{2}\right)^2}$
24.40	$\dfrac{\mathrm{ch}\,v\sqrt{p}}{\mathrm{ch}\,\sqrt{p}}$	$\int_1^v \vartheta_1\left(\dfrac{u}{2},\ t\right)du+1,\quad -1\leqslant v\leqslant 1$
24.41	$\dfrac{\mathrm{ch}\,(v-1)\sqrt{p}}{\mathrm{ch}\,\sqrt{p}}$	$1-\int_0^v \vartheta_2\left(\dfrac{u}{2},\ t\right)du,\quad 0<v<2$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
24.42	$\dfrac{p\,\mathrm{ch}\,(a-v)\sqrt{p}}{\mathrm{ch}\,a\sqrt{p}}$	$-\dfrac{1}{a}\dfrac{\partial}{\partial v}\vartheta_2\left(\dfrac{v}{2a},\ \dfrac{t}{a^2}\right),\quad 0<v<2a$
24.43	$\dfrac{p\,\mathrm{ch}\,v\sqrt{p}}{\mathrm{ch}\sqrt{p}}$	$\dfrac{\partial}{\partial v}\vartheta_1\left(\dfrac{v}{2},\ t\right),\quad -1<v<1$
24.44	$\dfrac{\sqrt{p}\,\mathrm{ch}\,2v\sqrt{p}}{\mathrm{ch}\sqrt{p}}$	$-\hat{\vartheta}_1(v,\ t),\quad -\dfrac{1}{2}\leqslant v\leqslant\dfrac{1}{2}$
24.45	$\dfrac{\sqrt{p}\,\mathrm{ch}\,(2v-1)\sqrt{p}}{\mathrm{ch}\sqrt{p}}$	$\hat{\vartheta}_2(v,\ t),\quad 0\leqslant v\leqslant 1$
24.46	$\dfrac{\mathrm{ch}\left(\dfrac{a}{p}\right)}{p\sqrt{p}}$	$\dfrac{1}{2a\sqrt{\pi}}\sqrt{t}\left[\mathrm{ch}\,(2\sqrt{at})-\cos\,(2\sqrt{at})\right]-\dfrac{1}{4a\sqrt{a\pi}}\times[\mathrm{sh}\,(2\sqrt{at})-\sin\,(2\sqrt{at})]$
24.47	$\dfrac{\mathrm{ch}\,(xp)}{\mathrm{ch}\,(ap)}$	$1+\dfrac{2}{\pi}\sum\limits_{n=1}^{\infty}\dfrac{(-1)^n}{n-\dfrac{1}{2}}\times\cos\left[\left(n-\dfrac{1}{2}\right)\dfrac{\pi x}{a}\right]\times\cos\left[\left(n-\dfrac{1}{2}\right)\dfrac{\pi t}{a}\right],\quad -a\leqslant x\leqslant a$
24.48	$\dfrac{p}{p-i\omega}\,\dfrac{\mathrm{ch}\,(x\sqrt{p})}{\mathrm{ch}\,(l\sqrt{p})}$	$\dfrac{\mathrm{ch}\,(x\sqrt{i\omega})}{\mathrm{ch}\,(l\sqrt{i\omega})}e^{i\omega t}-2\pi\sum\limits_{n=0}^{\infty}\dfrac{(-1)^n\left(n+\dfrac{1}{2}\right)}{\left(n+\dfrac{1}{2}\right)^2\pi^2+i\omega l^2}\times\cos\left[\left(n+\dfrac{1}{2}\right)\dfrac{\pi x}{l}\right]e^{-\left(n+\frac{1}{2}\right)^2\frac{\pi^2 t}{l^2}}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
24.49	$\operatorname{sh}\frac{1}{p}$	$\frac{1}{2}[J_0(2\sqrt{t})-I_0(2\sqrt{t})]$
24.50	$\sqrt{p}\operatorname{sh}\frac{1}{p}$	$\frac{\operatorname{ch}(2\sqrt{t})-\cos(2\sqrt{t})}{2\sqrt{\pi t}}$
24.51	$\frac{1}{\sqrt{p}}\operatorname{sh}\frac{1}{p}$	$\frac{\operatorname{sh}(2\sqrt{t})-\sin(2\sqrt{t})}{2\sqrt{\pi}}$
24.52	$\frac{1}{p^{\nu}}\operatorname{sh}\frac{1}{p}$	$\frac{1}{2}t^{\frac{\nu}{2}}[J_\nu(2\sqrt{t})-I_\nu(2\sqrt{t})]$, $\operatorname{Re}\nu>-1$
24.53	$\sqrt{p}\exp\left(-\frac{\alpha^2+\beta^2}{4p}\right)\operatorname{sh}\left(\frac{\alpha\beta}{2p}\right)$	$\frac{\sin(\alpha\sqrt{t})\sin(\beta\sqrt{t})}{\sqrt{\pi t}}$
24.54	$\frac{1}{\operatorname{sh}ap}$	$2k$ при $(2k-1)a<t<(2k+1)a$ 0 при $0<t<a$ $k=1,\,2,\,\ldots;\quad a>0$
24.55	$\frac{p}{(p+b)\operatorname{sh}[a(p+b)]}$	$2ke^{-bt}$ при $(2k-1)a<t<(2k+1)a$ 0 при $0<t<a$ $k=1,\,2,\,\ldots;\quad a>0$
24.56	$\frac{p}{(p+b)^2\operatorname{sh}[a(p+b)]}$	$2k(t-ak)e^{-bt}$ при $(2k-1)a<t<(2k+1)a$ 0 в остальных случаях $k=1,\,2,\,\ldots;\quad a>0$
24.57	$\frac{p}{(p^2+a^2)\operatorname{sh}\frac{\pi}{2a}p}$	$\frac{1}{a}(\lvert\cos at\rvert-\cos at)=2\frac{\cos at}{a}$ при $(4k+1)\frac{\pi}{2a}<t<(4k+3)\frac{\pi}{2a}$ 0 в остальных случаях $k=0,\,1,\,2,\,\ldots;\quad a>0$
24.58	$\frac{\left(ap+\frac{1}{2}\right)e^{-ap}}{p\operatorname{sh}ap}$	$2ka-t$ при $2ka<t<2(k+1)a$ $k=0,\,1,\,2,\,\ldots;\quad a>0$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
24.59	$\dfrac{p}{\operatorname{sh}\sqrt{p}}$	$-\left[\dfrac{\partial}{\partial v}\hat{\vartheta}_0\left(\dfrac{v}{2},\ t\right)\right]_{v=0}$
24.60	$\dfrac{\sqrt{p}}{\operatorname{sh}\sqrt{p}}$	$\vartheta_0(0,\ t)$
24.61	$\dfrac{p\operatorname{sh}(\nu\operatorname{Arch}p)}{\sqrt{p^2-1}}$	$\dfrac{\sin\nu\pi}{\pi}K_\nu(t),\quad \lvert\operatorname{Re}\nu\rvert<1$
24.62	$\dfrac{\operatorname{sh}v\sqrt{p}}{\operatorname{sh}\sqrt{p}}$	$-\int\limits_0^v\vartheta_0\left(\dfrac{u}{2},\ t\right)du,\quad -1<v<1$
24.63	$\dfrac{\operatorname{sh}v\sqrt{p}}{\operatorname{sh}a\sqrt{p}}$	$-\dfrac{1}{a}\int\limits_0^v\vartheta_0\left(\dfrac{u}{2a},\ \dfrac{t}{a^2}\right)du$ $0<v<a$
24.64	$\dfrac{\operatorname{sh}(v-1)\sqrt{p}}{\operatorname{sh}\sqrt{p}}$	$\int\limits_1^v\vartheta_3\left(\dfrac{u}{2},\ t\right)du,\quad 0\leqslant v\leqslant 2$
24.65	$\dfrac{p\operatorname{sh}v\sqrt{p}}{\operatorname{sh}\sqrt{p}}$	$\dfrac{\partial}{\partial v}\vartheta_0\left(\dfrac{v}{2},\ t\right),\quad -1<v<1$
24.66	$\dfrac{p\operatorname{sh}(a-v)\sqrt{p}}{\operatorname{sh}a\sqrt{p}}$	$-\dfrac{1}{a}\dfrac{\partial}{\partial v}\vartheta_3\left(\dfrac{v}{2a},\ \dfrac{t}{a^2}\right),\quad 0<v<2a$
24.67	$\dfrac{\sqrt{p}\operatorname{sh}2v\sqrt{p}}{\operatorname{sh}\sqrt{p}}$	$-\hat{\vartheta}_0(v,\ t),\quad -\dfrac{1}{2}\leqslant v\leqslant\dfrac{1}{2}$
24.68	$\dfrac{\sqrt{p}\operatorname{sh}(2v-1)\sqrt{p}}{\operatorname{sh}\sqrt{p}}$	$-\hat{\vartheta}_3(v,\ t),\quad 0\leqslant v\leqslant 1$
24.69	$\dfrac{\sqrt{p}\operatorname{sh}[(a-u)\sqrt{p}]\operatorname{sh}(v\sqrt{p})}{\operatorname{sh}(a\sqrt{p})}$	$\dfrac{2}{a}\sum\limits_{k=1}^\infty e^{-k^2\frac{\pi^2}{a^2}t}\sin k\dfrac{\pi}{a}u\times$ $\times\sin k\dfrac{\pi}{a}v=$ $=\dfrac{1}{2a}\left[\vartheta_3\left(\dfrac{v-u}{2},\ \dfrac{t}{a^2}\right)-\right.$ $\left.-\vartheta_3\left(\dfrac{v+u}{2},\ \dfrac{t}{a^2}\right)\right]$ $0\leqslant v\leqslant u\leqslant a$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
24.70	$\dfrac{\operatorname{sh} ap}{\operatorname{ch} 2ap}$	1 при $(8k-7)a<t<(8k-5)a$ -1 при $(8k-3)a<t<(8k-1)a$ 0 в остальных случаях $k=1, 2, 3, \ldots;\quad a>0$
24.71	$\dfrac{\operatorname{sh} ap}{p \operatorname{ch} 2ap}$	0 при $(8k-1)a<t<(8k+1)a$ $t-(8k+1)a$ при $(8k+1)a<t<(8k+3)a$ $2a$ при $(8k+3)a<t<(8k+5)a$ $-t+(8k+7)a$ при $(8k+5)a<t<(8k+7)a$ $k=0, 1, 2, \ldots;\quad a>0$
24.72	$\dfrac{\operatorname{sh} ap}{\operatorname{ch}^2 ap}$	$4k-2$ при $(4k-3)a<t<(4k-1)a$ $-4k$ при $(4k-1)a<t<(4k+1)a$ $k=1, 2, 3, \ldots;\quad a>0$
24.73	$\dfrac{\operatorname{ch} v\sqrt{p}}{\operatorname{sh}\sqrt{p}}$	$\int\limits_0^v \hat{\vartheta}_0\left(\frac{u}{2}, t\right)du+$ $+\int\limits_0^t \left[\frac{\partial}{\partial v}\hat{\vartheta}_0\left(\frac{v}{2}, \tau\right)\right]_{v=0} d\tau$ $-1<v<1$
24.74	$\dfrac{\operatorname{ch}(v-1)\sqrt{p}}{\operatorname{sh}\sqrt{p}}$	$\int\limits_v^1 \hat{\vartheta}_3\left(\frac{u}{2}, t\right)du-$ $-\int\limits_0^t \left[\frac{\partial}{\partial v}\vartheta_0\left(\frac{v}{2}, \tau\right)\right]_{v=0} d\tau$ $0<v<2$
24.75	$\dfrac{p \operatorname{ch} v\sqrt{p}}{\operatorname{sh}\sqrt{p}}$	$-\frac{\partial}{\partial v}\hat{\vartheta}_0\left(\frac{v}{2}, t\right),\quad -1<v<1$
24.76	$\dfrac{p \operatorname{ch}(v-1)\sqrt{p}}{\operatorname{sh}\sqrt{p}}$	$-\frac{\partial}{\partial v}\hat{\vartheta}_3\left(\frac{v}{2}, t\right),\quad 0<v<2$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
24.77	$\dfrac{\sqrt{p}\,\mathrm{ch}\,2v\sqrt{p}}{\mathrm{sh}\sqrt{p}}$	$\vartheta_0(v,\ t),\quad -\frac{1}{2}\leqslant v\leqslant\frac{1}{2}$
24.78	$\dfrac{\sqrt{p}\,\mathrm{ch}\,v\sqrt{p}}{\mathrm{sh}\,a\sqrt{p}}$	$\frac{1}{a}\vartheta_0\left(\frac{v}{2a},\ \frac{t}{a^2}\right),\quad 0<v<a$
24.79	$\dfrac{\sqrt{p}\,\mathrm{ch}\,(2v-1)\sqrt{p}}{\mathrm{sh}\sqrt{p}}$	$\vartheta_3(v,\ t),\quad 0\leqslant v\leqslant 1$
24.80	$\dfrac{\mathrm{sh}\,v\sqrt{p}}{\mathrm{ch}\sqrt{p}}$	$-\int\limits_0^v\hat{\vartheta}_1\left(\frac{u}{2},\ t\right)du,\quad -1\leqslant v\leqslant 1$
24.81	$\dfrac{\mathrm{sh}\,(v-1)\sqrt{p}}{\mathrm{ch}\sqrt{p}}$	$\int\limits_1^v\hat{\vartheta}_2\left(\frac{u}{2},\ t\right)du,\quad 0\leqslant v\leqslant 2$
24.82	$\dfrac{p\,\mathrm{sh}\,v\sqrt{p}}{\mathrm{ch}\sqrt{p}}$	$-\frac{\partial}{\partial v}\hat{\vartheta}_1\left(\frac{v}{2},\ t\right),\quad -1<v<1$
24.83	$\dfrac{p\,\mathrm{sh}\,(v-1)\sqrt{p}}{\mathrm{ch}\sqrt{p}}$	$\frac{\partial}{\partial v}\hat{\vartheta}_2\left(\frac{v}{2},\ t\right),\quad 0<v<2$
24.84	$\dfrac{\sqrt{p}\,\mathrm{sh}\,2v\sqrt{p}}{\mathrm{ch}\sqrt{p}}$	$\vartheta_1(v,\ t),\quad -\frac{1}{2}\leqslant v\leqslant\frac{1}{2}$
24.85	$\dfrac{\sqrt{p}\,\mathrm{sh}\,(2v-1)\sqrt{p}}{\mathrm{ch}\sqrt{p}}$	$-\vartheta_2(v,\ t),\quad 0\leqslant v\leqslant 1$
24.86	$\dfrac{\mathrm{sh}\,\frac{a}{p}}{p\sqrt{p}}$	$\frac{1}{2a}\sqrt{\frac{t}{\pi}}\times$ $\times[\mathrm{ch}\,(2\sqrt{at})+\cos\,(2\sqrt{at})]-$ $-\frac{1}{4a\sqrt{a\pi}}\times$ $\times[\mathrm{sh}\,(2\sqrt{at})+\sin\,(2\sqrt{at})]$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
24.87	$\dfrac{\operatorname{sh}(xp)}{\operatorname{ch}(ap)}$	$\dfrac{2}{\pi}\sum_{n=1}^{\infty}\dfrac{(-1)^{n-1}}{n-\frac{1}{2}}\sin\left[\left(n-\frac{1}{2}\right)\frac{\pi x}{a}\right]\times$ $\times\sin\left[\left(n-\frac{1}{2}\right)\frac{\pi t}{a}\right],\qquad 0\leqslant x\leqslant a$
24.88	$\dfrac{p}{p-i\omega}\,\dfrac{\operatorname{sh}(x\sqrt{p})}{\operatorname{sh}(l\sqrt{p})}$	$\dfrac{\operatorname{sh}(x\sqrt{i\omega})}{\operatorname{sh}(l\sqrt{i\omega})}e^{i\omega t}+$ $+2\pi\sum_{n=1}^{\infty}\dfrac{n(-1)^n\sin\left(\frac{n\pi x}{l}\right)}{n^2\pi^2+i\omega l^2}\times$ $\times\exp\left(-n^2\pi^2\frac{t}{l^2}\right),\qquad 0<x\leqslant l$
24.89	$\dfrac{\operatorname{sh}(xp)}{p\operatorname{ch}(ap)}$	$t+\dfrac{2a}{\pi^2}\sum_{n=1}^{\infty}\dfrac{(-1)^n}{\left(n-\frac{1}{2}\right)^2}\times$ $\times\sin\left[\left(n-\frac{1}{2}\right)\frac{\pi x}{a}\right]\times$ $\times\cos\left[\left(n-\frac{1}{2}\right)\frac{\pi t}{a}\right],\qquad 0\leqslant x\leqslant a$
24.90	$\dfrac{\operatorname{ch}(xp)}{p\operatorname{ch}(ap)}$	$t+\dfrac{2a}{\pi^2}\sum_{n=1}^{\infty}\dfrac{(-1)^n}{\left(n-\frac{1}{2}\right)^2}\times$ $\times\cos\left[\left(n-\frac{1}{2}\right)\frac{\pi x}{a}\right]\times$ $\times\sin\left[\left(n-\frac{1}{2}\right)\frac{\pi t}{a}\right],\quad -a\leqslant x\leqslant a$
24.91	$\operatorname{th}\alpha p$	1 при $(4k-4)\alpha<t<(4k-2)\alpha$ -1 при $(4k-2)\alpha<t<4\alpha k$ $k=1,2,3,\ldots;\quad \alpha>0$
24.92	$\dfrac{p\operatorname{th}[\alpha(p+a)]}{p+a}$	$(-1)^{k-1}e^{-at}$ при $2\alpha(k-1)<t<2\alpha k$ $k=1,2,3,\ldots;\quad \alpha>0$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
24.93	$\dfrac{p\,\mathrm{th}\,[\alpha(p+a)]}{(p+a)^2}$	$[\alpha+(-1)^k(2\alpha k-\alpha-t]\,e^{-at}$ при $2\alpha(k-1)<t<2\alpha k$ $k=1,\ 2,\ 3,\ \ldots;\quad a>0$
24.94	$\mathrm{th}\,\sqrt{p}$	$\int_0^1 \hat{\vartheta}_2\left(\frac{\tau}{2},\ t\right)d\tau=U(0,\ t)$
24.95	$\sqrt{p}\,\mathrm{th}\,\sqrt{p}$	$\vartheta_2(0,\ t)$
24.96	$\sqrt{p}\,\mathrm{th}\,(\sqrt{p}+\alpha)$	$U(\alpha,\ t)$
24.97	$\mathrm{cth}\,\alpha p$	$2k-1$ при $2(k-1)\alpha<t<2\alpha k$ $k=1,\ 2,\ 3,\ \ldots;\quad \alpha>0$
24.98	$\dfrac{p\,\mathrm{cth}\,[\alpha(p+a)]}{p+a}$	$(2k-1)\,e^{-at}$ при $2\alpha(k-1)<t<2\alpha k$, $k=1,\ 2,\ 3,\ \ldots;\quad \alpha>0$
24.99	$\dfrac{p\,\mathrm{cth}\,[\alpha(p+a)]}{(p+a)^2}$	$[(2k-1)\,t-2\alpha k\,(k-1)]\,e^{-at}$ при $2\alpha(k-1)<t<2\alpha k$ $k=1,\ 2,\ 3,\ \ldots;\quad \alpha>0$
24.100	$\dfrac{p}{p^2+a^2}\,\mathrm{cth}\,\dfrac{\pi}{2a}\,p$	$\dfrac{1}{a}\,\lvert\sin at\rvert$
24.101	$\dfrac{p^2}{p^2+a^2}\,\mathrm{cth}\,\dfrac{\pi}{2a}\,p$	$\cos t$ при $2k\dfrac{\pi}{a}<t<(2k+1)\dfrac{\pi}{a}$ $-\cos at$ при $(2k+1)\dfrac{\pi}{a}<t<(2k+2)\dfrac{\pi}{a}$ $k=0,\ 1,\ 2,\ \ldots;\quad a>0$
24.102	$\sqrt{p}\,\mathrm{cth}\,\sqrt{p}$	$\vartheta_3(0,\ t)=\vartheta_3(1,\ t)=\vartheta_0\left(\frac{1}{2},\ t\right)$
24.103	$\dfrac{1+ap\,\mathrm{th}\,ap}{p\,\mathrm{ch}\,ap}$	$2t$ при $(4k-3)\,a<t<(4k-1)\,a$ 0 в остальных случаях $k=1,\ 2,\ 3,\ \ldots;\quad a>0$

§ 25. Логарифмические, обратные тригонометрические и обратные гиперболические функции

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
25.1	$\ln p$	$\psi(1)-\ln t$
25.2	$\frac{\ln p}{p}$	$t[1+\Gamma'(1)-\ln t]$
25.3	$\frac{p\ln p}{p^2+1}$	$\cos t\,\mathrm{Si}(t)-\sin t\,\mathrm{Ci}(t)$
25.4	$\frac{p}{p^2+1}\left(p\ln p-\frac{\pi}{2}\right)$	$\cos t\,\mathrm{ci}(t)-\sin t\,\mathrm{si}(t)$
25.5	$\frac{p^2\ln p}{p^2+1}$	$-[\sin t\,\mathrm{Si}(t)+\cos t\,\mathrm{Ci}(t)]$
25.6	$\frac{p}{p^2+1}\left(\ln p+\frac{\pi}{2}p\right)$	$\sin t\,\mathrm{ci}(t)+\cos t\,\mathrm{si}(t)$
25.7	$\sqrt{p}\ln p$	$-\frac{\ln t+C+\ln 4}{\sqrt{\pi t}}, \quad C=-\Gamma'(1)$
25.8	$\frac{\ln p}{p^{\nu-1}}$	$\frac{t^{\nu-1}}{\Gamma(\nu)}[\Psi(\nu)-\ln t], \quad \mathrm{Re}\,\nu>0$
25.9	$\ln(p+\alpha)$	$\ln\alpha-\mathrm{Ei}(-\alpha t), \quad \mathrm{Re}\,\alpha>0$
25.10	$\ln(p-\alpha)$	$\ln\alpha-\mathrm{Ei}(\alpha t), \quad \mathrm{Re}\,\alpha>0$
25.11	$\frac{p\ln(p+a)}{p+a}$	$[\Psi(1)-\ln t]\,e^{-at}$
25.12	$\frac{p\ln(p+a)}{(p+a)^\nu}$	$\frac{\Psi(\nu)-\ln t}{\Gamma(\nu)}t^{\nu-1}e^{-at}, \quad \mathrm{Re}\,\nu>0$
25.13	$p\left[\frac{\ln(p+b)}{(p+b)^\nu}-\frac{\ln(p+a)}{(p+a)^\nu}\right]$	$\frac{\Psi(\nu)-\ln t}{\Gamma(\nu)}t^{\nu-1}(e^{-bt}-e^{-at})$, $\mathrm{Re}\,\nu>0$
25.14	$\ln(p^2+1)$	$2\,\mathrm{ci}(t)$
25.15	$\ln(p^2+\alpha^2)$	$2[\ln\alpha+\mathrm{ci}(\alpha t)]$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
25.16	$\ln(p^2-\alpha^2)$	$-2[\operatorname{ch}\operatorname{i}(\alpha t)-\ln\alpha]$
25.17	$\frac{\ln(p^2+1)}{p}$	$-2[t\operatorname{Ci}(t)-\sin t]$
25.18	$\frac{\ln(p^2+\alpha^2)}{p}$	$2t\left[\ln\alpha+\frac{\sin\alpha t}{\alpha t}-\alpha\operatorname{Ci}(\alpha t)\right]$
25.19	$-\frac{\ln(p^2-\alpha^2)}{p}$	$2t\operatorname{chi}(\alpha t)-\frac{2\operatorname{sh}\alpha t}{\alpha}-2t\ln\alpha$
25.20	$p\ln\frac{p-\alpha}{p}$	$\frac{1-e^{\alpha t}}{t}$
25.21	$\left(1-\frac{\alpha}{p}\right)^m\ln\left(1-\frac{\alpha}{p}\right)$	$\frac{d}{dm}L_m(\alpha t)$
25.22	$\ln\frac{p+a}{p-a}$	$2\operatorname{shi}(\alpha t)$
25.23	$p\ln\frac{p+a}{p-a}$	$\frac{2\operatorname{sh}at}{t}$
25.24	$p\ln\frac{p-\alpha}{p-a}$	$\frac{e^{at}-e^{\alpha t}}{t}$
25.25	$p\left[\left(p+\frac{\alpha}{2}\right)\ln\left(1+\frac{\alpha}{p}\right)-\alpha\right]$	$\frac{\alpha t+2}{2t^2}(e^{-\alpha t}-1)+\frac{\alpha}{t}$
25.26	$p^2\ln\left(1+\frac{\alpha}{p}\right)-\alpha p$	$\frac{\alpha te^{-\alpha t}+e^{-\alpha t}-1}{t^2}$
25.27	$p\ln\frac{p^2-\alpha^2}{p^2}$	$\frac{2(1-\operatorname{ch}\alpha t)}{t}$
25.28	$p\ln\left(1+\frac{1}{p^2}\right)$	$\frac{4}{t}\sin^2\frac{t}{2}$
25.29	$p\ln\frac{p^2+\alpha^2}{p^2}$	$\frac{2(1-\cos\alpha t)}{t}$
25.30	$p^2\ln\frac{p^2+\alpha^2}{p^2}$	$2\left(\frac{\cos\alpha t-1}{t^2}+\frac{\alpha\sin\alpha t}{t}\right)$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
25.31	$p^2\ln\frac{p^2-\alpha^2}{p^2}$	$2\left(\frac{\operatorname{ch}\alpha t-1}{t^2}-\frac{\alpha\operatorname{sh}\alpha t}{t}\right)$
25.32	$p\ln\frac{p^2+\alpha^2}{p^2+a^2}$	$\frac{2(\sin\alpha t+\sin at)}{t}$
25.33	$p\ln\frac{p+b}{p+a}$	$\frac{e^{-at}-e^{-bt}}{t}$
25.34	$p^2\ln\frac{p+a}{p+b}+(b-a)p$	$\left(\frac{a}{t}+\frac{1}{t^2}\right)e^{-at}-\left(\frac{b}{t}+\frac{1}{t^2}\right)e^{-bt}$
25.35	$p\ln\frac{p^2+b^2}{p^2+a^2}$	$\frac{2}{t}[\cos(at)-\cos(bt)]$
25.36	$p^2\ln\frac{p^2+b^2}{p^2+a^2}$	$\frac{2}{t^2}[\cos(bt)+bt\sin(bt)-$ $-\cos(at)-at\sin(at)]$
25.37	$\frac{p}{2}\ln\sqrt{1-\frac{4}{p^2}}$	$\frac{\operatorname{sh}^2 t}{t}$
25.38	$-\sqrt{\pi p}\,\ln(4\gamma p)$	$\frac{\ln t}{\sqrt{t}}$
25.39	$-\ln(\gamma p)$	$\ln t$
25.40	$\frac{\Gamma(\nu)}{p^{\nu-1}}\left[\Psi(\nu)-\ln p\right]$	$t^{\nu-1}\ln t,\ \operatorname{Re}\nu>0$
25.41	$\frac{\pi^2}{6}+\left[\ln(\gamma p)\right]^2$	$(\ln t)^2$
25.42	$\frac{p^2}{4}\ln\left(1+\frac{4a^2}{p^2}\right)$	$\frac{(2at\cos at-\sin at)\sin at}{t^2}$
25.43	$\frac{p}{4}\ln\left(1+\frac{4a^2}{p^2}\right)$, $\operatorname{Re}p>2\lvert\operatorname{Im}a\rvert$	$\frac{\sin^2(at)}{t}$
25.44	$p\ln\frac{(p+\alpha)^2+b^2}{(p+a)^2+b^2}$	$2\frac{\cos bt}{t}(e^{-at}-e^{-\alpha t})$

№	$\overline{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
25.45	$p\ln\frac{p^2+ap+b}{p^2-ap+b}$	$\frac{4}{t}\operatorname{sh}\frac{at}{2}\cos t\sqrt{b-\frac{a^2}{4}}$
25.46	$p\left[\ln\frac{(p^2+\alpha^2)^2}{p^3}-\frac{1}{2}\ln(p^2+4\alpha^2)\right]$	$\frac{8}{t}\sin^4\frac{\alpha t}{2}$
25.47	$p\ln\frac{(p^2+a^2)(p^2+b^2)}{\left[p^2+\left(\frac{a-b}{2}\right)^2\right]^2}$	$\frac{8}{t}\sin^2\left(\frac{a+b}{4}t\right)\cos\left(\frac{a-b}{2}t\right)$
25.48	$\sqrt{p}\ln(\sqrt{p}+\sqrt{\alpha+p})$	$\frac{1}{2\sqrt{\pi t}}[\ln\alpha-\operatorname{Ei}(-\alpha t)]$
25.49	$\sqrt{p}\ln(\sqrt{p}+\sqrt{1+p})$	$-\frac{\operatorname{Ei}(-t)}{2\sqrt{\pi t}}$
25.50	$\frac{p\ln(\sqrt{p+a}+\sqrt{p-a})}{\sqrt{p-a}}$	$\frac{e^{at}}{2\sqrt{\pi t}}[\ln 2a-\operatorname{Ei}(-2at)]$
25.51	$\ln(p+\sqrt{p^2+\alpha^2})$	$\operatorname{Ji}_0(\alpha t)+\ln\alpha$
25.52	$\ln(p+\sqrt{p^2-\alpha^2})$	$\operatorname{Ii}_0(\alpha t)+\ln\alpha+\frac{\pi i}{2}$
25.53	$\frac{a}{\sqrt{p^2-a^2}}\ln\left(\frac{p+\sqrt{p^2-a^2}}{a}\right)$	$\frac{\pi}{2}-\int_{at}^\infty K_0(s)\,ds$
25.54	$\frac{p}{\sqrt{p^2+a^2}}\ln\frac{a+\sqrt{p^2+a^2}}{p}$	$\frac{\pi}{2}\mathbf{H}_0(at)$
25.55	$4p^2-\frac{4p^4+3a^2p^2}{a\sqrt{p^2+a^2}}\ln\frac{a+\sqrt{p^2+a^2}}{p}$	$\frac{\pi a^2}{2}\mathbf{H}_3(at)-\frac{a^2}{3}-\frac{a^4t^2}{15}$
25.56	$\frac{2p^3+ap}{a\sqrt{p^2+a^2}}\ln\frac{a+\sqrt{p^2+a^2}}{p}-2p$	$\frac{\pi a}{2}\mathbf{H}_2(at)-\frac{a^2t}{3}$
25.57	$p\left(p-\sqrt{p^2+a^2}\ln\frac{a+\sqrt{p^2+a^2}}{p}\right)$	$\frac{\pi a}{2t}\mathbf{H}_2(at)-\frac{a^2}{3}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
25.58	$\frac{p(4p^2+a^2)\sqrt{p^2+a^2}}{3a^3}\times$ $\times\ln\frac{a+\sqrt{p^2+a^2}}{p}-\frac{12p^2+7a^2}{9a^2}$	$\frac{\pi}{2}\frac{\mathbf{H}_3(at)}{t}-\frac{a^2t}{15}$
25.59	$\frac{p}{\sqrt{p^2+a^2}}\ln\frac{p+\sqrt{p^2+a^2}}{a}$	$-\frac{\pi}{2}Y_0(at)$
25.60	$\frac{p}{\sqrt{p^2-i}}\ln\frac{i\sqrt{i}+\sqrt{p^2-i}}{p}$	$\frac{\pi}{2}\mathbf{H}_0(ti\sqrt{i})=\operatorname{ster}t+i\operatorname{stei}t$
25.61	$\frac{p^2}{\sqrt{(p^2-a^2)^3}}\ln\frac{p+\sqrt{p^2-a^2}}{a}$	$tK_0(at)+\frac{\operatorname{sh}at}{a}$
25.62	$\frac{p}{\sqrt{p^2+a^2}}\left(1-\frac{2i}{\pi}\ln\frac{p+\sqrt{p^2+a^2}}{a}\right)$	$H_0^{(1)}(at)$
25.63	$\frac{p}{\sqrt{p^2-i}}\ln\frac{p+\sqrt{p^2-i}}{\sqrt{i}}$	$\operatorname{ker}t+i\operatorname{kei}t$
25.64	$\frac{p}{\sqrt{p^2+a^2}}\left(1+\frac{2i}{\pi}\ln\frac{p+\sqrt{p^2+a^2}}{a}\right)$	$H_0^{(2)}(at)$
25.65	$\frac{p\arccos\frac{p}{a}}{\sqrt{a^2-p^2}}$ при $\operatorname{Re}p<\operatorname{Re}\alpha$ $\frac{p}{\sqrt{p^2-a^2}}\ln\left(\frac{p}{a}+\sqrt{\frac{p^2}{a^2}-1}\right)$ при $\operatorname{Re}p>\operatorname{Re}\alpha$	$K_0(at)$
25.66	$\frac{p^2}{\sqrt{p^2+a^2}}\ln\frac{a+\sqrt{p^2+a^2}}{p}$	$a\left[1-\frac{\pi}{2}\mathbf{H}_1(at)\right]$
25.67	$\frac{p}{a}\sqrt{p^2+a^2}\ln\frac{a+\sqrt{p^2+a^2}}{p}-p$	$\frac{\pi}{2}\frac{\mathbf{H}_1(at)}{t}$
25.68	$\frac{p\ln(p+\sqrt{p^2-i})}{\sqrt{p^2-i}}$	$\operatorname{ker}t+i\operatorname{kei}t+\frac{\pi}{4}(\operatorname{ber}t+i\operatorname{bei}t)$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
25.69	$\dfrac{p\ln(p+\sqrt{p^2+a^2})}{\sqrt{p^2+a^2}}$	$\ln a J_0(at)-\dfrac{\pi}{2}Y_0(at)$
25.70	$\dfrac{p}{\sqrt{p^2+a^2}}\ln\dfrac{p+\sqrt{p^2+a^2}}{a}$	$\dfrac{\pi}{2i}H_0^{(2)}(at)-J_0(at)$
25.71	$\dfrac{p}{\sqrt{p^2-a^2}}\ln(p+\sqrt{p^2-a^2})$	$\ln a I_0(at)+K_0(at)$
25.72	$\dfrac{p\ln(p+\sqrt{p^2-ia^2})}{\sqrt{p^2-ia^2}}$	$\operatorname{ker}(at)+i\operatorname{kei}(at)+$ $+\dfrac{\pi}{4}[\operatorname{ber}(at)+i\operatorname{bei}(at)]+$ $+\ln a I_0(at\sqrt{i})$
25.73	$\dfrac{p^2}{\sqrt{(p^2-ia^2)^3}}\ln\left(\dfrac{p+\sqrt{p^2-i}}{a\sqrt{i}}\right)$	$t(\operatorname{ker} at+i\operatorname{kei} at)+$ $+\dfrac{\sqrt{2}\cos\dfrac{at}{\sqrt{2}}\operatorname{sh}\dfrac{at}{\sqrt{2}}}{a(1+i)}+$ $+\dfrac{i\sqrt{2}\sin\dfrac{at}{\sqrt{2}}\operatorname{ch}\dfrac{at}{\sqrt{2}}}{a(1+i)}$
25.74	$\dfrac{p\ln(p+\sqrt{p^2+a^2})}{(\sqrt{p^2+a^2})^3}$	$\ln a\int\limits_0^t \tau J_0(a\tau)\,d\tau-$ $-\dfrac{\cos at}{a^2}-\dfrac{\pi t}{2a}Y_1(at)$
25.75	$\dfrac{p}{\sqrt{(p^2+a^2)^3}}\ln\dfrac{p+\sqrt{p^2+a^2}}{a}$	$-\dfrac{\pi}{2}\left[\dfrac{\cos at}{a^2}+\dfrac{t}{a}Y_1(at)\right]$
25.76	$\dfrac{p}{\sqrt{(p^2-a^2)^3}}\ln\dfrac{p+\sqrt{p^2-a^2}}{a}$	$\dfrac{\operatorname{ch} at}{a^2}-\dfrac{t}{a}K_1(at)$
25.77	$\dfrac{p^2\ln(p+\sqrt{p^2+a^2})}{\sqrt{(p^2+a^2)^3}}$	$t\left[\dfrac{\sin at}{at}+\ln a J_0(at)-\right.$ $\left.-\dfrac{\pi}{2}Y_0(at)\right]$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
25.78	$\frac{p^2}{\sqrt{(p^2+a^2)^3}}\ln\frac{p+\sqrt{p^2+a^2}}{a}$	$\frac{\pi}{2}\left[\frac{\sin at}{a}-tY_0(at)\right]$
25.79	$\frac{p^2\ln(p+\sqrt{p^2-a^2})}{(\sqrt{p^2-a^2})^3}$	$t\left[K_0(at)+\ln a I_0(at)+\frac{\operatorname{sh} at}{at}\right]$
25.80	$\ln^2 p$	$[\Gamma'(1)-\ln t]^2-\psi'(1)=$ $=(\ln t+C)^2-\frac{\pi^2}{6}$
25.81	$(\ln p+C)^2$	$\ln^2 t-\frac{\pi^2}{6}$
25.82	$\frac{\ln^2 p}{p}$	$t\,[(1+\Gamma'(1)-\ln t)^2+1-\psi'(1)]$
25.83	$\frac{\ln^2 p}{p^n}$	$\frac{t^n}{\Gamma(n+1)}\{[\ln t-\psi(n+1)]^2-$ $-\psi'(n+1)\}$
25.84	$\ln^2(p+\sqrt{p^2+1})$	$-\pi Y'_0(t)$
25.85	$\ln^2(p+\sqrt{p^2-1})$	$2Ki_0(t)-\frac{\pi^2}{4}$
25.86	$p\operatorname{arctg}\left(\frac{2a}{p}\right)-\frac{p^2}{4}\ln\left(1+\frac{4a^2}{p^2}\right)$	$\frac{\sin^2 at}{at^2}$
25.87	$\frac{p}{\ln p}$	$\int_0^\infty \frac{t^{\tau-1}}{\Gamma(\tau)}\,d\tau=\nu'(t)$
25.88	$\frac{1}{p^{a-1}\ln p}$	$\int_a^\infty \frac{t^{\tau-1}}{\Gamma(\tau)}\,d\tau=\nu(t,a),\quad a\geqslant 0$
25.89	$\frac{p^{a+1}}{(p^{2a}+1)\ln p}$	$\sum_{k=1}^{\infty}\int_{(4k-3)a}^{(4k-1)a}\frac{t^{\tau-1}}{\Gamma(\tau)}\,d\tau,\quad a>0$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
25.90	$\ln^2(p+\sqrt{p^2+\alpha^2})$	$\ln^2\alpha-\pi Yi_0(\alpha t)+2\ln\alpha Ji_0(\alpha t)$
25.91	$\ln^2(p+\sqrt{p^2-\alpha^2})$	$\ln^2\alpha+i\pi\ln\alpha-\frac{\pi^2}{4}+2Ki_0(\alpha t)+$ $+2\ln\alpha Ii_0(\alpha t)$
25.92	$\ln^3 p$	$(\Gamma'(1)-\ln t)^3-3\psi'(1)[\Gamma'(1)-$ $-\ln t]+\psi''(1)=-(\ln t+C)^3+$ $+\frac{\pi^2}{2}(\ln t+C)^2+\psi''(1)$
25.93	$\frac{\ln^3 p}{p}$	$t\,[(1+\Gamma'(1)-\ln t)^3+$ $+3[1-\psi'(1)](\Gamma'(1)-\ln t)+$ $+5-3\psi'(1)-\psi''(1)]$
25.94	$\frac{1}{\ln p}$	$\nu(t)$
25.95	$\frac{p^{a+1}}{(p^{2a}-1)\ln p}$	$\sum\limits_{k=1}^{\infty}k\int\limits_{(2k-1)a}^{(2k+1)a}\frac{t^{\tau-1}}{\Gamma(\tau)}d\tau,\quad a>0$
25.96	$\frac{p(p^a+1)}{(p^a-1)\ln p}$	$\sum\limits_{k=1}^{\infty}(2k-1)\int\limits_{(k-1)a}^{ka}\frac{t^{\tau-1}}{\Gamma(\tau)}d\tau,\quad a>0$
25.97	$\frac{p(p^a-1)}{(p^a+1)\ln p}$	$\sum\limits_{k=1}^{\infty}\left\{\int\limits_{(2k-2)a}^{(2k-1)a}\frac{t^{\tau-1}}{\Gamma(\tau)}d\tau-\right.$ $\left.-\int\limits_{(2k-1)a}^{2ka}\frac{t^{\tau-1}}{\Gamma(\tau)}d\tau\right\},\quad a>0$
25.98	$\frac{p^{a+1}(p^{2a}-1)}{\ln p\,(p^{4a}+1)}$	$\sum\limits_{k=1}^{\infty}\left\{\int\limits_{(8k-7)a}^{(8k-5)a}\frac{t^{\tau-1}}{\Gamma(\tau)}d\tau-\right.$ $\left.-\int\limits_{(8k-3)a}^{(8k-1)a}\frac{t^{\tau-1}}{\Gamma(\tau)}d\tau\right\},\quad a>0$

№	$\overline{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
25.99	$\frac{1}{\ln p+a}$	$\nu(e^{-a}t)$
25.100	$\frac{1}{(\ln p)^{\nu+1}}$	$\frac{\mu(t,\ \nu)}{\Gamma(\nu+1)}$, $\operatorname{Re}\nu>-1$
25.101	$\frac{1}{p^n(\ln p)^{m+1}}$	$\frac{\mu(t,\ m,\ n)}{\Gamma(m+1)}$
25.102	$\frac{1}{\ln\ln p}$	$\int_0^\infty \frac{t^s\nu'(s)}{\Gamma(s+1)}\,ds=\int_0^\infty \frac{\mu(t,\ s-1)}{\Gamma(s)}\,ds$
25.103	$\frac{\ln\ln p}{p^n(\ln p)^{m+1}}$	$\frac{\psi(m+1)\,\mu(t,m,n)-\frac{\partial}{\partial m}\mu(t,m,n)}{\Gamma(m+1)}$
25.104	$\frac{1}{p^r(\ln p)^{n+\nu+1}(\ln\ln p)^{m+1}}$	$\frac{1}{\Gamma(\nu)\,\Gamma(m+1)}\times$ $\times\int_0^\infty \mu(s,\ m,\ n)\,\mu(t,\ \nu-1,\ r+s)\,ds$
25.105	$\frac{1}{\ln p\ \ln\ln p}$	$\int_0^\infty \frac{t^s\nu(s)}{\Gamma(s+1)}\,ds$
25.106	$\frac{\ln p-1}{\ln\ln\ln p}$	$\int_0^\infty \frac{t\,[\nu'(s)-\nu(s)]}{\Gamma(s+1)}\,ds$
25.107	$\operatorname{arctg}\frac{p}{a}$	$-\operatorname{si}(at)$
25.108	$p\operatorname{arctg}\frac{\alpha}{p}$	$\frac{\sin\alpha t}{t}$
25.109	$\frac{p\ln(p+\alpha)}{p+a}$	$e^{-at}\left\{\ln(\alpha-a)-\operatorname{Ei}[(a-\alpha)t]\right\}$
25.110	$\frac{(\ln p)^2}{p}$	$t\left\{[1-\ln(Ct)]^2+1-\frac{\pi^2}{6}\right\}$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
25.111	$\ln\sqrt{p^2+a^2}$	$\ln a+\operatorname{ci}(at)$
25.112	$\dfrac{\ln\sqrt{p^2+a^2}}{p}$	$t\left[\ln a+\dfrac{1}{at}\sin at+\operatorname{ci}(at)\right]$, $\operatorname{Re}a>0$
25.113	$\dfrac{p\ln\sqrt{p^2+a^2}}{p^2+a^2}$	$\dfrac{1}{2a}\sin at\left[\ln\left(\dfrac{2a}{Ct}\right)-\operatorname{Ci}(2at)\right]+$ $+\dfrac{1}{2a}\cos at\operatorname{Si}(2at)$
25.114	$\dfrac{p^2\ln\sqrt{p^2+a^2}}{p^2+a^2}$	$\dfrac{1}{2}\cos at\left[\ln\left(\dfrac{2a}{Ct}\right)-\operatorname{Ci}(2at)\right]-$ $-\dfrac{1}{2}\sin at\operatorname{Si}(2at)$
25.115	$p^2\ln\dfrac{\sqrt{p^2-a^2}}{p}$	$\dfrac{1}{t^2}[\operatorname{ch}(at)-1]-\dfrac{a}{t}\operatorname{sh}(at)$
25.116	$\dfrac{p\ln(p+\sqrt{p^2-a^2})}{(\sqrt{p^2-a^2})^3}$	$\dfrac{t}{a}[I_1(at)\ln a-K_1(at)]+\dfrac{1}{a^2}\operatorname{ch}(at)$
25.117	$\dfrac{2p}{v}\ln\dfrac{u+v}{u-v}$, $u=(A+1)(B+1)$, $v=$ $=\sqrt{(A^2-1)(B^2-1)}$ $A^2=p+b,\quad B^2=p-b$	$-e^tI_0(bt)\operatorname{Ei}(-t)$
25.118	$p\operatorname{arctg}\dfrac{\alpha}{p-a}$	$\dfrac{e^{at}\sin\alpha t}{t}$
25.119	$p\left[3\operatorname{arctg}\dfrac{\alpha}{p}-\operatorname{arctg}\dfrac{3\alpha}{p}\right]$	$\dfrac{4\sin^3\alpha t}{t}$
25.120	$p\left[5\operatorname{arctg}\dfrac{\alpha}{p}-\dfrac{5}{2}\operatorname{arctg}\dfrac{3\alpha}{p}+\right.$ $\left.+\dfrac{1}{2}\operatorname{arctg}\dfrac{5\alpha}{p}\right]$	$\dfrac{8\sin^5\alpha t}{t}$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
25.121	$p\operatorname{arctg}\dfrac{2ap}{p^2-a^2+b^2}$	$\dfrac{2\sin at\cos bt}{t}$
25.122	$p\operatorname{arcctg}\dfrac{p^2-\alpha^2}{2ap}$	$\dfrac{2\sin at\operatorname{ch}\sqrt{\alpha^2-a^2}\,t}{t}$
25.123	$p\operatorname{arcctg}\dfrac{p^2-ap+b}{ab}$	$\dfrac{e^{at}-1}{t}\sin bt$
25.124	$\operatorname{Arsh}\dfrac{p}{a}$	$Ji_0(at)$
25.125	$\dfrac{p}{\sqrt{p^2+a^2}}\operatorname{Arsh}\dfrac{a}{p}$	$\dfrac{\pi}{2}\mathbf{H}_0(at)$
25.126	$\dfrac{p}{\sqrt{p^2-a^2}}\arcsin\dfrac{a}{p}$	$\dfrac{\pi}{2}\mathbf{L}_0(at)$
25.127	$\dfrac{p^2}{\sqrt{p^2+a^2}}\arcsin\dfrac{a}{p}$	$a\left[1+\dfrac{\pi}{2}\mathbf{L}_1(at)\right]$
25.128	$p\left[1-\dfrac{1}{a}\sqrt{p^2-a^2}\arcsin\dfrac{a}{p}\right]$	$\dfrac{\pi}{2}\dfrac{\mathbf{L}_1(at)}{t}$
25.129	$p^2\left(\alpha-\sqrt{p^2-\alpha^2}\arcsin\dfrac{\alpha}{p}\right)$	$\dfrac{\pi\alpha^2}{2}\dfrac{\mathbf{L}_2(\alpha t)}{t}+\dfrac{\alpha^3}{3}$
25.130	$\dfrac{2p^3-pa^2}{\sqrt{p^2-a^2}}\arcsin\dfrac{a}{p}-2ap$	$\dfrac{\pi a^2}{2}\mathbf{L}_2(at)+\dfrac{a^3t}{3}$
25.131	$\dfrac{4p^4-3a^2p^2}{\sqrt{p^2-a^2}}\arcsin\dfrac{a}{p}-4ap^2$	$\dfrac{\pi a^3}{2}\mathbf{L}_3(at)+\dfrac{a^5t^2}{15}-\dfrac{a^3}{3}$
25.132	$\dfrac{12p^3-7ap^2}{9a^2}-$ $-\dfrac{p(4p^2-a^2)\sqrt{p^2-a^2}}{3a^3}\arcsin\dfrac{a}{p}$	$\dfrac{\pi}{2}\dfrac{\mathbf{L}_3(at)}{t}+\dfrac{a^2t}{15}$
25.133	$p\left[-\alpha\operatorname{arctg}\dfrac{\alpha}{p}+\dfrac{p}{2}\ln\left(1+\dfrac{\alpha^2}{p^2}\right)\right]$	$\dfrac{\cos\alpha t-1}{t^2}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
25.134	$p\left[\alpha \operatorname{Arth}\frac{\alpha}{p}+\frac{p}{2}\ln\left(1-\frac{\alpha^2}{p^2}\right)\right]$	$\frac{\operatorname{ch}\alpha t-1}{t^2}$
25.135	$\frac{p}{p^2+1}\left[\operatorname{arctg}\frac{2}{p}+p\ln\sqrt{p^2+4}\right]$	$\sin t\, si(t)+\cos t\operatorname{ci}(t)$
25.136	$\frac{p}{p^2+1}\left[p\operatorname{arctg}\frac{2}{p}-\ln\sqrt{p^2+4}\right]$	$\sin t\operatorname{Ci}(t)+\cos t\operatorname{Si}(t)$
25.137	$\frac{p}{p^2+a^2}\left[p\operatorname{arctg}\frac{a}{p}-a\ln\sqrt{p^2+a^2}\right]$	$(\ln t-C)\sin at$
25.138	$\frac{p}{p^2-a^2}\left[p\operatorname{Arth}\frac{a}{p}-a\ln\sqrt{p^2-a^2}\right]$	$(\ln t-C)\operatorname{sh}at$
25.139	$\frac{p}{p^2+a^2}\left[p\ln\sqrt{p^2+a^2}+a\operatorname{arctg}\frac{a}{p}\right]$	$(C-\ln t)\cos at$
25.140	$\frac{p}{p^2-a^2}\left[p\ln\sqrt{p^2-a^2}-a\operatorname{Arth}\frac{a}{p}\right]$	$(C-\ln t)\operatorname{ch}at$
25.141	$\frac{p}{p^2+1}\left[\operatorname{arctg}\frac{2}{p}+p\ln p\sqrt{p^2+4}\right]$	$2\cos t\operatorname{ci}(t)$
25.142	$\frac{p}{p^2+1}\left[p\operatorname{arctg}\frac{2}{p}-\ln p\sqrt{p^2+4}\right]$	$2\sin t\operatorname{Ci}(t)$
25.143	$\frac{p}{p^2+1}\left[p\operatorname{arctg}\frac{2}{p}-\ln\frac{\sqrt{p^2+4}}{p}\right]$	$2\cos t\operatorname{Si}(t)$
25.144	$\frac{p}{p^2+1}\left[p\operatorname{arctg}\frac{1}{p-1}-\ln\sqrt{p^2-2p+2}\right]$	$\sin t\operatorname{Ei}(t)$
25.145	$\frac{p}{p^2+1}\operatorname{arctg}\frac{1}{p-1}+p\ln\sqrt{p^2-2p+2}\Big]$	$-\cos t\operatorname{Ei}(t)$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
25.146	$\frac{p}{p^2+a^2}\left[p\,\mathrm{arctg}\,\frac{2bp}{b^2-a^2-p^2}+a\ln\sqrt{\frac{(b+a)^2+p^2}{(b-a)^2+p^2}}\right]$	$-\frac{2}{b}\cos at\,\mathrm{Si}\,(bt),\quad b\neq 0$
25.147	$\frac{p}{p^2+a^2}\left[p\,\mathrm{arctg}\,\frac{2ap}{p^2+b^2-a^2}-a\ln\frac{\sqrt{(p^2+b^2-a^2)^2+4a^2p^2}}{b^2}\right]$	$\frac{2}{b}\sin(at)\,\mathrm{Ci}\,(bt),\quad b\neq 0$
25.148	$p\,\mathrm{arctg}\,\frac{\alpha}{p}\ln\sqrt{p^2+\alpha^2}$	$-\frac{\sin\alpha t}{t}(\ln t+C)$
25.149	$(\mathrm{Arsh}\,p)^2$	$\int\limits_t^\infty\frac{Y_0(\tau)}{\tau}\,d\tau$
25.150	$p\,\mathrm{arctg}\,\frac{2ap}{p^2+b^2}$	$\frac{2}{t}\sin(at)\cos\left(\sqrt{a^2+b^2}\,t\right)$

§ 26. Гамма-функция и ей родственные функции

№	$\bar{f}(p)$	$f(t)$
26.1	$\frac{p\Gamma(ap)}{\Gamma(ap+\nu)}$	$\frac{1}{\Gamma(\nu)\,a}\left(1-e^{-\frac{t}{a}}\right)^{\nu-1}$
26.2	$\frac{p2^{1-2p}\,\Gamma(2p)}{\Gamma\left(p+\lambda+\frac{1}{2}\right)\Gamma\left(p-\lambda+\frac{1}{2}\right)}$	$\frac{\cos\left[2\lambda\arccos\left(e^{-\frac{t}{2}}\right)\right]}{\pi\sqrt{1-e^{-t}}}$
26.3	$\frac{p2^{p-1}\Gamma\left(\frac{p}{2}+\frac{\nu}{2}+\frac{1}{2}\right)\Gamma\left(\frac{p}{2}-\frac{\nu}{2}\right)}{\sqrt{\pi}\,\Gamma(p+\mu+1)}$	$(1-e^{-2t})^{\frac{\mu}{2}}P_\nu^{-\mu}(e^t)$ $\mathrm{Re}\,\mu>-\frac{1}{2}$
26.4	$\frac{2^{1-p}\,\Gamma(p)}{\Gamma\left(\frac{p+n+1}{2}\right)\Gamma\left(\frac{p-n+1}{2}\right)}$	$\frac{1}{\pi\sqrt{1-e^{-2t}}}T_n(e^{-t})$
26.5	$\frac{p\Gamma(p+a)}{\Gamma(p+b)}(\gamma+p)_n$	$\frac{e^{-at}}{\Gamma(b-a-n)}(1-e^{-t})^{b-a-n-1}\times$ $\times\,{}_2F_1(-n,\ b-\gamma-n;\ b-a-n;\ 1-e^{-t}),\quad \mathrm{Re}\,(b-a)>n$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt} f(t)\,dt$	$f(t)$
26.6	$\dfrac{p\alpha^{-ap}\,\Gamma(ap)}{\Gamma(ap+n+1)}$	0 при $0<t<a\ln\alpha$ $\dfrac{\left(1-\alpha e^{-\frac{t}{a}}\right)^n}{an!}$ при $t>a\ln\alpha$ $a>0,\ \alpha>1$
26.7	$\dfrac{p\Gamma\left(-\frac{1}{4}-\frac{ip}{2}\right)}{(1-2ip)\,\Gamma\left(\frac{1}{4}-\frac{ip}{2}\right)}$	$\dfrac{i-1}{\sqrt{\pi}}\sqrt{\sin t}$
26.8	$\dfrac{p\Gamma\left(-\frac{ab+ip}{2b}\right)}{\Gamma\left(1+\frac{ab-ip}{2b}\right)}$	$\dfrac{(2i)^{a+1}}{\Gamma(a+1)}\sin^a bt$, $\operatorname{Re} a>-1$
26.9	$\dfrac{pe^{-\frac{\pi}{2}p}}{\Gamma\left(1+\frac{a+ip}{2}\right)\Gamma\left(1+\frac{a-ip}{2}\right)}$	0 при $t>\pi$ $\dfrac{2^a}{\pi\Gamma(a+1)}\sin^a t$ при $t<\pi$ $\operatorname{Re} a>1$
26.10	$p\ln\dfrac{\Gamma(p)\,\Gamma(p+a+b)}{\Gamma(p+a)\,\Gamma(p+b)}$	$\dfrac{(1-e^{-at})(1-e^{-bt})}{t(1-e^{-t})}$
26.11	$p\int\limits_0^\infty\dfrac{ds}{(p+s)\,\Gamma(s+1)}$	$\nu(e^{-t})$
26.12	$p\Gamma(p)\int\limits_0^\infty\dfrac{ds}{\Gamma(p+s+1)}$	$\nu(1-e^{-t})$
26.13	$\int\limits_0^\alpha\dfrac{\Gamma^2(s+1)\,ds}{p^s}$	$\lambda\left(\frac{1}{t},\alpha\right)$
26.14	$p\mathrm{B}(p,\nu)$	$(1-e^{-t})^{\nu-1}$, $\operatorname{Re}\nu>0$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
26.15	$\frac{pB(p,\alpha)}{a^p}$	$(1-ae^{-t})^{\alpha-1}$ при $t>\ln a$ 0 при $t<\ln a$ $\operatorname{Re}\alpha>0,\quad a>0$
26.16	$\psi(p)$	$\psi(1)-\ln(e^t-1)$
26.17	$\psi\left(\frac{p}{a}\right)$	$\psi(1)-\ln(e^{at}-1)$
26.18	$\frac{p\Gamma\left(\frac{p-n-\mu}{2}\right)\Gamma\left(\frac{p-n-\mu+1}{2}\right)}{\Gamma\left(\frac{p+n+\mu}{2}+1\right)\Gamma\left(\frac{p-n+\mu+1}{2}\right)}$	$\frac{2^{\mu+1}\sqrt{\pi}}{\Gamma\left(\mu+\frac{1}{2}\right)}\operatorname{sh}^{\mu}t\,P_n^{-\mu}(\operatorname{ch}t)$
26.19	$\frac{p\Gamma(p+a)\Gamma(p+b)}{\Gamma(p+c)\Gamma(p+d)}$	$\frac{e^{-at}(1-e^{-t})^{c+d-a-b-1}}{\Gamma(c+d-a-b)}\times$ $\times{}_2F_1(d-b,\ c-b;\ c+d-a-b;$ $1-e^{-t}),\ \operatorname{Re}(c+d-a-b)>0$
26.20	$\ln p-\psi(p)$	$\ln\frac{e^t-1}{t}$
26.21	$p[\ln p-\psi(p)]$	$\frac{1}{1-e^{-t}}-\frac{1}{t}$
26.22	$\psi\left(\frac{p+1}{2}\right)-\psi\left(\frac{p}{2}\right)$	$2\ln\frac{1+e^t}{2}$
26.23	$p\left[\psi\left(\frac{p+1}{2}\right)-\psi\left(\frac{p}{2}\right)\right]$	$\frac{2}{1+e^{-t}}$
26.24	$p[\psi(p+\alpha)-\psi(p)]$	$\frac{1-e^{-\alpha t}}{1-e^{-t}}$
26.25	$p\left[\psi\left(\frac{p+3a}{4a}\right)-\psi\left(\frac{p+a}{4a}\right)\right]$	$\frac{2a}{\operatorname{ch}at}$
26.26	$2p^2\left[\psi\left(p+\frac{1}{2}\right)-\psi(p)\right]-p$	$\frac{1}{4\operatorname{ch}^2\frac{t}{4}}$

10В Зак. 1125

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
26.27	$p\psi'(p)$	$\frac{t}{1-e^{-t}}$
26.28	$p\psi'[\alpha(p+\beta)]$	$\frac{te^{-\beta t}}{\alpha^2\left[1-\exp\left(-\frac{t}{\alpha}\right)\right]}$
26.29	$p\psi^{(n)}(p)$	$-\frac{(-t)^n}{1-e^{-t}}$
26.30	$p\psi^{(n)}[\alpha(p+\beta)]$	$\frac{(-1)^{n-1}t^ne^{-\beta t}}{\alpha^{n+1}\left[1-\exp\left(-\frac{t}{\alpha}\right)\right]}$
26.31	$p\ln\frac{e^p\Gamma(p)}{\sqrt{2\pi}\,p^{p-\frac{1}{2}}}$	$\frac{1}{t}\left(\frac{1}{1-e^{-t}}-\frac{1}{t}-\frac{1}{2}\right)$
26.32	$p\ln\frac{\sqrt{p+a}\,\Gamma(p+a)}{\Gamma\left(p+a+\frac{1}{2}\right)}$	$\frac{1}{2t}e^{-at}\,\mathrm{th}\left(\frac{t}{4}\right)$
26.33	$p\ln\frac{\Gamma\left(p+a+\frac{3}{4}\right)}{\sqrt{p+a}\,\Gamma\left(p+a+\frac{1}{4}\right)}$	$\frac{1}{2t}e^{-at}\left[1-\frac{1}{\mathrm{ch}\,\frac{t}{4}}\right]$
26.34	$p\ln\frac{\Gamma(p+a)\Gamma\left(p+b+\frac{1}{2}\right)}{\Gamma\left(p+a+\frac{1}{2}\right)\Gamma(p+b)}$	$\frac{e^{-at}-e^{-bt}}{t\left(1+e^{-\frac{t}{2}}\right)}$
26.35	$p\ln\frac{\Gamma(p+a)\,\Gamma(p+b+c)}{\Gamma(p+a+c)\,\Gamma(p+b)}$	$\frac{(e^{-at}-e^{-bt})(1-e^{-ct})}{t(1-e^{-t})}$
26.36	$p\left[\ln\frac{\Gamma\left(\frac{p}{2}\right)}{\Gamma\left(\frac{p-1}{2}\right)}-\frac{1}{2}\psi\left(\frac{p}{2}\right)\right]$	$\frac{e^t\left(t-2e^{\frac{t}{2}}\,\mathrm{ch}\,\frac{t}{2}\right)}{2t(\mathrm{ch}\,t+1)}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt} f(t)\,dt$	$f(t)$
26.37	$p\left[\ln\dfrac{\Gamma\left(1+\frac{p}{2}\right)}{\Gamma\left(\frac{1+p}{2}\right)}-\dfrac{1}{2}\psi\left(\dfrac{p}{2}\right)\right]$	$\dfrac{1-e^t+te^{2t}}{t(e^{2t}-1)}$
26.38	$p\left[\ln\dfrac{\Gamma\left(\frac{p+1}{2}\right)}{\Gamma\left(\frac{p}{2}\right)}-\dfrac{1}{2}\psi\left(\dfrac{p+1}{2}\right)\right]$	$\dfrac{t-e^t+1}{2t\operatorname{sh}t}$
26.39	$p\left[\ln\dfrac{\Gamma\left(\frac{p+1}{2}\right)}{\Gamma\left(\frac{p}{2}\right)}-\dfrac{1}{2}\psi\left(\dfrac{p-1}{2}\right)\right]$	$\dfrac{t-e^t+1}{2t\operatorname{sh}t}+e^t$
26.40	$p\left[\ln\dfrac{\Gamma(ap+b)}{\Gamma(ap+c)}+\right.$ $\left.+(c-b)\psi(ap+d)\right]$	$\left[\dfrac{e^{-\frac{b}{a}t}-e^{-\frac{c}{a}t}}{t}+\dfrac{b-c}{a}e^{-\frac{d}{a}t}\right]\times$ $\times\dfrac{1}{1-e^{-\frac{t}{a}}}$
26.41	$\int\limits_0^\infty\dfrac{\psi(s+1)}{p^s}\,ds$	$\nu(t)\ln t+1$
26.42	$p\omega(p)$	$\dfrac{1}{t}\left(\dfrac{1}{2}-\dfrac{1}{t}+\dfrac{1}{e^t-1}\right)$
26.43	$\omega'(p)$	$-\ln\dfrac{2\operatorname{sh}\frac{t}{2}}{t}$
26.44	$-p\omega'(p)$	$\dfrac{1}{e^t-1}-\dfrac{1}{t}+\dfrac{1}{2}$
26.45	$p\mathrm{B}(p,\alpha)[\psi(p+\alpha)-\psi(p)]$	$t(1-e^{-t})^{\alpha-1},\quad \operatorname{Re}\alpha>0$
26.46	$p\left[\ln\sqrt{2\pi}-\ln\mathrm{B}\left(\dfrac{p}{2},\ \dfrac{1}{2}\right)-\right.$ $\left.-\dfrac{1}{2}\psi(p)\right]$	$\dfrac{1}{1+e^{-t}}\left[\dfrac{1}{2}-\dfrac{1}{t}+\dfrac{1}{e^t-1}\right]$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
26.47	$p\gamma(p, 1)$	$\exp(-e^{-t})$
26.48	$p[\gamma(-p, \beta)-\gamma(-p, \alpha)]$	$\exp(-e^{t})$ при $\ln\alpha < t < \ln\beta$ 0 в остальных случаях $1 \leqslant \alpha < \beta$
26.49	$p\gamma\left(\nu, \frac{1}{p}\right)$	$t^{\frac{\nu}{2}-1} J_\nu(2\sqrt{t})$, $\operatorname{Re}\nu > 0$
26.50	$p\gamma\left(\nu, -\frac{1}{p}\right)$	$(-1)^\nu t^{\frac{\nu}{2}-1} I_\nu(2\sqrt{t})$, $\operatorname{Re}\nu>0$
26.51	$\frac{p\gamma[\nu, \alpha(p+a)]}{(p+a)^\nu}$	$t^{\nu-1}e^{-at}$ при $t<\alpha$ 0 при $t>\alpha$, $\operatorname{Re}\nu>0$
26.52	$p^\nu e^{-\frac{1}{ap}}\gamma,\left(\nu, -\frac{1}{ap}\right)$	$\frac{e^{-i\pi\nu}\Gamma(\nu)}{(at)^{\nu/2}} J_\nu\left(2\sqrt{\frac{t}{a}}\right)$ $\operatorname{Re}\nu>0$
26.53	$p\gamma\left[\nu, \frac{1}{a(p+b)}\right]$	$\frac{e^{-bt}t^{\frac{\nu}{2}-1}}{a^{\frac{\nu}{2}}} J_\nu\left(2\sqrt{\frac{t}{a}}\right)$ $\operatorname{Re}\nu>0$
26.54	$p(p+b)^{\nu-1}\exp\left[\frac{1}{a(p+b)}\right]\times$ $\times\gamma\left[\nu, \frac{1}{a(p+b)}\right]$	$\frac{\Gamma(\nu)}{(at)^{\frac{\nu}{2}}} e^{-bt} I_\nu\left(2\sqrt{\frac{t}{a}}\right)$ $\operatorname{Re}\nu>0$
26.55	$p^{\nu-\frac{1}{2}} e^{\frac{a}{p}}\gamma\left(\nu, \frac{a}{p}\right)$	$\Gamma(\nu)\left(\frac{t}{a}\right)^{\frac{1}{4}-\frac{\nu}{2}} \mathrm{L}_{\nu-\frac{1}{2}}(2\sqrt{at})$

№	$\bar f(p) = p\int_0^\infty e^{-pt} f(t)\,dt$	$f(t)$
26.56	$p^{\mu+1}\gamma\left(\nu, \frac{a}{p}\right)$	$t^{-\mu-1}\int_0^{at} u^{\frac{\nu}{2}+\frac{\mu}{2}-\frac{1}{2}} \times J_{\nu-\mu-1}(2\sqrt{u})\,du$, $\operatorname{Re}\nu>0$, $\operatorname{Re}(\nu-\mu)>0$
26.57	$p^{\mu+1} e^{\frac{a}{p}}\gamma\left(\nu, \frac{a}{p}\right)$	$\frac{a^{\nu}}{\nu\Gamma(\nu-\mu)} t^{\nu-\mu-1}\, {}_1F_2(1;\ \nu+1,\ \nu-\mu;\ at)$, $\operatorname{Re}\nu>0$, $\operatorname{Re}\mu>0$
26.58	$\left(\frac{2}{a}\right)^{\nu} p\gamma\left[\nu, \frac{\sqrt{p^2+a^2}-p}{2}\right]$	$t^{\frac{\nu}{2}-1}(t+1)^{-\frac{\nu}{2}} J_{\nu}(a\sqrt{t(t+1)})$ $\operatorname{Re}\nu>0$
26.59	$p\Gamma[1-\nu, \alpha(p+\beta)]$	$\frac{e^{-\beta t}(t-\alpha)^{\nu-1}}{\Gamma(\nu)\alpha^{\nu-1}t}$ при $t>\alpha$; 0 при $t<\alpha$; $\operatorname{Re}\nu>0$
26.60	$\frac{p}{(p+a)^{\nu}}\Gamma[\nu, \alpha(p+a)]$	$t^{\nu-1}e^{-at}$ при $t>\alpha$; 0 при $t<\alpha$; $\operatorname{Re}\nu>0$
26.61	$p\exp(\alpha^2 p)\,\Gamma[1-\nu,\ \alpha^2(p+\beta)]$	$\frac{t^{\nu-1}\exp[-\beta(t+\alpha^2)]}{\alpha^{2\nu-2}\Gamma(\nu)(t+\alpha^2)}$ $\operatorname{Re}\alpha>0$, $\operatorname{Re}\nu>0$
26.62	$\frac{p}{(p+a)^{\nu}}\exp(\alpha^2 p) \times \Gamma[\nu, \alpha^2(p+a)]$	$\exp[-a(t-\alpha^2)](t+\alpha^2)^{\nu-1}$ $\operatorname{Re}\alpha>0$
26.63	$p\exp[\alpha(p+\beta)^2] \times \Gamma[1-\nu,\ \alpha(p+\beta)^2]$	$\frac{2^{2\nu-2}}{i^{2\nu-1}\sqrt{\alpha}\,\Gamma(2\nu-1)} \times \exp\left(-\beta t-\frac{t^2}{4\alpha}\right) \times \gamma\left(\nu-\frac{1}{2}, \frac{i^2t^2}{4\alpha}\right)$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
26.64	$\frac{p}{\sqrt{p+a}}\exp[\alpha(p+a)^2]\times$ $\times\Gamma\left[\frac{1}{4},\ \alpha(p+a)^2\right]$	$\frac{\Gamma\left(\frac{1}{4}\right)}{2\sqrt{\alpha}}\sqrt{t}\exp\left(-at-\frac{t^2}{8\alpha}\right)\times$ $\times I_{\frac{1}{4}}\left(\frac{t^2}{8\alpha}\right)$, $\operatorname{Re}\alpha\geqslant 0$
26.65	$\frac{p}{(p+a)^{2\nu}}\exp[\alpha(p+a)^2]\times$ $\times\Gamma[\nu,\alpha(p+a)^2]$	$\frac{\sqrt{2^3}\,\alpha^{\nu-\frac{1}{4}}}{\sqrt{t}}\exp\left(-at-\frac{t^2}{8\alpha}\right)\times$ $\times M_{\frac{1}{4}-\nu,\ \frac{1}{4}}\left(\frac{t^2}{4\alpha}\right)$ $\operatorname{Re}\alpha\geqslant 0$
26.66	$\frac{1}{p^{\nu-1}}\exp\left(\frac{1}{a^2p}\right)\Gamma\left(1-\nu,\ \frac{1}{a^2p}\right)$	$\frac{2a^{\nu-1}t^{\frac{\nu-1}{2}}}{\Gamma(\nu)}K_{\nu-1}\left(\frac{2\sqrt{t}}{a}\right)$ $\operatorname{Re}\nu>0$
26.67	$\frac{p}{(p+a)^{\nu}}\exp\left[\frac{1}{b(p+a)}\right]\times$ $\times\Gamma\left[1-\nu,\ \frac{1}{b(p+a)}\right]$	$\frac{2}{\Gamma(\nu)}(bt)^{\frac{\nu-1}{2}}e^{-at}K_{\nu-1}\left(2\sqrt{\frac{t}{b}}\right)$ $\operatorname{Re}\nu>0$
26.68	$p^{\nu}e^{\frac{a}{p}}\,\Gamma\left(\nu,\ \frac{a}{p}\right)$	$\frac{2a^{\frac{\nu}{2}}}{\Gamma(1-\nu)}t^{-\frac{\nu}{2}}K_{\nu}(2\sqrt{at})$ $\operatorname{Re}\nu<1$
26.69	$p^{1-2\nu}e^{\frac{a^2p^2}{2}}\,\Gamma\left(\nu,\ \frac{a^2p^2}{2}\right)$	$\frac{\Gamma(\nu)\,a^{2\nu-1}}{\sqrt{2\pi}}\exp\left(-\frac{t^2}{4a^2}\right)\times$ $\times\left[D_{-2\nu}\left(-\frac{t}{a}\right)-D_{-2\nu}\left(\frac{t}{a}\right)\right]$
26.70	$p^{\nu-\frac{1}{2}}e^{\frac{a}{p}}\,\Gamma\left(\nu,\ \frac{a}{p}\right)$	$\Gamma(\nu)\left(\frac{a}{t}\right)^{\frac{\nu}{2}-\frac{1}{4}}[I_{\frac{1}{2}-\nu}(2\sqrt{at})-$ $-\mathbf{L}_{\nu-\frac{1}{2}}(2\sqrt{at})]$, $\operatorname{Re}\nu<\frac{3}{2}$

№	$\overline{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
26.71	$p^{\mu+1}\Gamma\left(\nu, \frac{a}{p}\right)$	$t^{-\mu-1}\int_{at}^{\infty} u^{\frac{\mu+\nu-1}{2}} J_{\nu-\mu-1}(2\sqrt{u})\,du$ $\operatorname{Re}(\mu+\nu)<-\frac{1}{2}$, $\operatorname{Re}\mu>0$
26.72	$pQ(1, -p)$	$\exp(-e^t)$
26.73	$\frac{1}{p^{\nu-1}}Q(\alpha p, \nu)$	$t^{\nu-1}$ при $t>\alpha$ 0 при $t<\alpha$
26.74	$\frac{1}{(p-a)\,p^{\nu-1}}Q(\alpha p, \nu)$	$e^{at}\int_{\alpha}^{t} e^{-a\tau}\tau^{\nu-1}d\tau$ при $t>\alpha$ 0 при $t<\alpha$ $a\geqslant 0$, $\alpha\geqslant 0$
26.75	$pe^{\alpha p}Q(\alpha p, \nu)$	$\frac{\alpha^{1-\nu}}{\Gamma(\nu)}\frac{t^{\nu-1}}{t+\alpha}$, $\operatorname{Re}\nu>0$, $\operatorname{Re}\alpha>0$
26.76	$\frac{e^{\alpha p}}{p^{\nu-1}}Q(\alpha p, \nu)$	$(t+\alpha)^{\nu-1}$, $\operatorname{Re}\alpha>0$
26.77	$e^{-\alpha p}Q(\alpha a, \nu)-$ $-\frac{a^{\nu}}{(p+a)^{\nu}}Q[\alpha(p+a), \nu]$	0 при $t<\alpha$ $Q(at, \nu)$ при $t>\alpha$

§ 27. Интегральные функции

27.1	$\operatorname{Ei}(-p)$	0 при $t<1$ $-\ln t$ при $t>1$
27.2	$[\ln\alpha-\operatorname{Ei}(-\alpha p)]$	$\ln\alpha$ при $t<\alpha$ $\ln t$ при $t>\alpha$ $\alpha>0$
27.3	$\operatorname{Ei}[-\alpha(p+\beta)]$	0 при $t<\alpha$ $\operatorname{Ei}(-\alpha\beta)-\operatorname{Ei}(-\beta t)$ при $t>\alpha$ $\alpha>0$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
27.4	$p\,\mathrm{Ei}(-\alpha p)$	0 при $t<\alpha$ $-\frac{1}{t}$ при $t>\alpha$ $\alpha>0$
27.5	$p\,\mathrm{Ei}[-\alpha(p+\beta)]$	0 при $t<\alpha$ $-\frac{e^{-\beta t}}{t}$ при $t>\alpha$
27.6	$[\mathrm{Ei}(-\alpha p)-C-\ln p]$	$\ln t$ при $t<\alpha$ $\ln\alpha$ при $t>\alpha$ $\alpha>0$
27.7	$\int\limits_0^p\frac{e^{-\alpha s}-1}{s}\,ds=$ $=\mathrm{Ei}(-\alpha p)-C-\ln\alpha p$	0 при $t>\alpha$ $\ln\frac{t}{\alpha}$ при $t<\alpha$ $\alpha>0$
27.8	$e^{p}\,\mathrm{Ei}(-p)$	$-\ln(1+t)$
27.9	$e^{-p}\,\mathrm{Ei}(p)$	$-\ln(1-t)$
27.10	$pe^{p}\,\mathrm{Ei}(-p)$	$-\frac{1}{1+t}$
27.11	$pe^{\alpha p}\,\mathrm{Ei}[-p(\alpha+\beta)]$	0 при $t<\beta$ $-\frac{1}{\alpha+t}$ при $t>\beta$ $\alpha(\alpha^2+\beta^2)>0$
27.12	$pe^{\alpha p}\,\mathrm{Ei}[-\alpha(p+\beta)]$	$-\frac{e^{-\beta(t+\alpha)}}{t+\alpha}$, $\alpha>0$
27.13	$p\left[\frac{1}{\alpha}+pe^{\alpha p}\,\mathrm{Ei}(-\alpha p)\right]$	$\frac{1}{(\alpha+t)^2}$, $\alpha>0$
27.14	$p[e^{-\alpha p}+\alpha p\,\mathrm{Ei}(-\alpha p)]$	0 при $t<\alpha$ $\frac{\alpha}{t^2}$ при $t>\alpha$ $\alpha>0$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
27.15	$pe^{-bp}+bp^2\,\mathrm{Ei}(-bp)$	0 при $0<t<b$ $\frac{b}{t^2}$ при $t>b$ $b>0$
27.16	$p\,[\mathrm{Ei}^2(-\alpha p)]$	0 при $t<2\alpha$ $\frac{1}{t}\ln\left(\frac{t}{\alpha}-1\right)$ при $t>2\alpha$ $\alpha>0$
27.17	$p\,\mathrm{Ei}(p)\,\mathrm{Ei}(-p)$	$\frac{\ln(1-t^2)}{t}$
27.18	$p\,\mathrm{Ei}(-\alpha p)\,\mathrm{Ei}(-\beta p)$	0 при $t<\alpha+\beta$ $\frac{1}{t}\ln\frac{(t-\alpha)(t-\beta)}{\alpha\beta}$ при $t>\alpha+\beta$ $\alpha>0,\ \beta>0$
27.19	$p\,\overline{\mathrm{Ei}}(p)\,\mathrm{Ei}(-p)$	$\frac{\ln\lvert 1-t^2\rvert}{t}$
27.20	$pe^{p}\,\mathrm{Ei}^2(-p)$	0 при $t<1$ $\frac{\ln t}{1+t}$ при $t>1$
27.21	$pe^{\alpha p}\,\mathrm{Ei}^2(-\alpha p)$	0 при $t<\alpha$ $\frac{\ln t-\ln\alpha}{t+\alpha}$ при $t>\alpha$ $\alpha>0$
27.22	$pe^{\alpha p}\,[\mathrm{Ei}^2(-\alpha p)-\ln\alpha^2\,\mathrm{Ei}(-2\alpha p)]$	0 при $t<\alpha$ $\frac{\ln t}{t+\alpha}$ при $t>\alpha$ $\alpha>0$
27.23	$pe^{(\alpha+\beta)p}\,\mathrm{Ei}(-\alpha p)\,\mathrm{Ei}(-\beta p)$	$\frac{1}{t+\alpha+\beta}\ln\frac{(t+\alpha)(t+\beta)}{\alpha\beta}$ $\alpha\neq 0,\ \beta\neq 0,\ \mathrm{Im}(\alpha+\beta)=0$ $\mathrm{Re}(\alpha+\beta)\geqslant 0$

№	$\bar{f}(p) = p\int_0^\infty e^{-pt} f(t)\,dt$	$f(t)$
27.24	$pe^{(\alpha+\beta)p}[\mathrm{Ei}(-\alpha p)\,\mathrm{Ei}(-\beta p)-$ $-\ln\alpha\beta\,\mathrm{Ei}(-\alpha p-\beta p)]$	$\frac{\ln[(t+\alpha)(t+\beta)]}{t+\alpha+\beta}$, $\alpha\neq 0,\ \beta\neq 0,\ \mathrm{Re}(\alpha+\beta)\geqslant 0$ $\mathrm{Im}(\alpha+\beta)=0$
27.25	$p\exp\left(\frac{p^2}{4a^2}\right)\mathrm{Ei}\left(-\frac{p^2}{4a^2}\right)$	$\frac{2i}{\sqrt{\pi}}a\exp(-a^2t^2)\,\mathrm{erf}(iat)$ $\lvert\arg a\rvert<\frac{\pi}{4}$
27.26	$p\exp[\alpha(p+\beta)^2]\,\mathrm{Ei}[-\alpha(p+\beta)^2]$	$i\sqrt{\frac{\pi}{\alpha}}\exp\left(-\beta t-\frac{t^2}{4\alpha}\right)\times$ $\times\mathrm{erf}\left(\frac{it}{2\sqrt{\alpha}}\right),\quad \alpha>0$
27.27	$\mathrm{Ei}\left(-\frac{1}{p}\right)$	$2Ji_0(2\sqrt{t})$
27.28	$p^{-\nu}\,\mathrm{Ei}\left(-\frac{a}{p}\right)$	$2t^{\nu}\int_\infty^{\sqrt{at}} u^{-\nu-1}J_\nu(2u)\,du$ $\mathrm{Re}\,\nu>-1,\ \mathrm{Re}\,a>0$
27.29	$\exp\left(\frac{1}{a^2p}\right)\mathrm{Ei}\left(-\frac{1}{a^2p}\right)$	$-2K_0\left(\frac{2\sqrt{t}}{a}\right),\quad a\neq 0$
27.30	$\frac{p}{p+b}\exp\left[\frac{1}{a(p+b)}\right]\times$ $\times\mathrm{Ei}\left[-\frac{1}{a(p+b)}\right]$	$-2e^{-bt}K_0\left(2\sqrt{\frac{t}{a}}\right)$
27.31	$-\mathrm{Ei}(-n\ln p)$	$\mathrm{vi}(t,\ n)$
27.32	$p^{-\nu}e^{\frac{a}{p}}\,\mathrm{Ei}\left(-\frac{a}{p}\right)$	$t^{\nu}\int_\infty^{at} u^{-\frac{\nu}{2}-1}J_\nu[2\sqrt{u-at}]\,du$ $\mathrm{Re}\,\nu>-1$
27.33	$p[\sin p\,\mathrm{Ci}(p)-\cos p\,\mathrm{si}(p)]$	$\frac{1}{t^2+1}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt} f(t)\,dt$	$f(t)$
27.34	$p\,[\cos p\,\mathrm{Ci}\,(p)+\sin p\,\mathrm{si}\,(p)]$	$-\frac{t}{t^2+1}$
27.35	$\cos p\,\mathrm{ci}\,(p)-\sin p\,\mathrm{si}\,(p)$	$-\ln\sqrt{t^2+1}$
27.36	$\sin p\,\mathrm{ci}\,(p)+\cos p\,\mathrm{si}\,(p)$	$-\mathrm{arctg}\,t$
27.37	$p\,[\mathrm{Ci}^2\,(p)+\mathrm{si}^2\,(p)]$	$\frac{\ln(t^2+1)}{t}$
27.38	$\cos\frac{\pi}{2}p^2\left[\frac{1}{2}-S\left(\frac{\pi p^2}{2}\right)\right]-$ $-\sin\frac{\pi}{2}p^2\left[\frac{1}{2}-C\left(\frac{\pi p^2}{2}\right)\right]$	$C\left(\frac{t^2}{2\pi}\right)$
27.39	$\cos\frac{\pi}{2}p^2\left[\frac{1}{2}-C\left(\frac{\pi p^2}{2}\right)\right]+$ $+\sin\frac{\pi}{2}p^2\left[\frac{1}{2}-S\left(\frac{\pi p^2}{2}\right)\right]$	$S\left(\frac{t^2}{2\pi}\right)$
27.40	$p\left\{\cos\frac{\pi}{2}p^2\left[\frac{1}{2}-S\left(\frac{\pi p^2}{2}\right)\right]-\right.$ $\left.-\sin\frac{\pi}{2}p^2\left[\frac{1}{2}-C\left(\frac{\pi p^2}{2}\right)\right]\right\}$	$\frac{1}{\pi}\cos\frac{t^2}{2\pi}$
27.41	$p\left\{\cos\frac{\pi}{2}p^2\left[\frac{1}{2}-C\left(\frac{\pi p^2}{2}\right)\right]+\right.$ $\left.+\sin\frac{\pi}{2}p^2\left[\frac{1}{2}-S\left(\frac{\pi p^2}{2}\right)\right]\right\}$	$\frac{1}{\pi}\sin\frac{t^2}{2\pi}$
27.42	$p\left[\frac{1}{2}-C\left(\frac{\pi p^2}{2}\right)\right]+p\left[\frac{1}{2}-S\left(\frac{\pi p^2}{2}\right)\right]$	$\frac{1}{\sqrt{2\pi}}\,\mathrm{Si}\left(\frac{t^2}{2\pi}\right)$
27.43	$\left[C\left(\frac{p^2}{4}\right)-\frac{1}{2}\right]^2+$ $+\left[S\left(\frac{p^2}{4}\right)-\frac{1}{2}\right]^2$	$\frac{1}{\pi}\,\mathrm{si}\,(t^2)+\frac{1}{2}$
27.44	$p\left\{\left[\frac{1}{2}-S\left(\frac{\pi p^2}{2}\right)\right]^2+\right.$ $\left.+\left[\frac{1}{2}-C\left(\frac{\pi p^2}{2}\right)\right]^2\right\}$	$\frac{2}{\pi t}\sin\frac{t^2}{2\pi}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
27.45	$p\left[\frac{1}{2}-C(pz)\right]\cos pz+$ $+p\left[\frac{1}{2}-S(pz)\right]\sin pz$	$\frac{1}{\pi}\sqrt{\frac{z}{2}}\frac{\sqrt{t}}{t^2+z^2}$ $z\neq 0,\ \lvert\arg z\rvert<\frac{\pi}{2}$
27.46	$p\left[\frac{1}{2}-S(pz)\right]\cos pz-$ $-p\left[\frac{1}{2}-C(pz)\right]\sin pz$	$\frac{1}{\pi\sqrt{2}}z^{\frac{3}{2}}\frac{1}{\sqrt{t}(t^2+z^2)}$ $z\neq 0,\ \lvert\arg z\rvert<\frac{\pi}{2}$
27.47	$\int\limits_p^\infty\cos(\sigma^2-p^2)\,d\sigma$	$\frac{1}{2}\int\limits_0^t\sin\frac{\tau^2}{4}\,d\tau=$ $=\sqrt{\frac{\pi}{2}}S\left(\frac{t^2}{4}\right)$
27.48	$\int\limits_p^\infty\sin(\sigma^2-p^2)\,d\sigma$	$\frac{1}{2}\int\limits_0^t\cos\frac{\tau^2}{4}\,d\tau=$ $=\sqrt{\frac{\pi}{2}}C\left(\frac{t^2}{4}\right)$
27.49	$p\int\limits_p^\infty\sin(\sigma^2-p^2)\,d\sigma$	$\frac{1}{2}\cos\frac{t^2}{4}$
27.50	$p\int\limits_p^\infty\cos(\sigma^2-p^2)\,d\sigma$	$\frac{1}{2}\sin\frac{t^2}{4}$
27.51	$pC_n(a,p)$	0 при $0<t<\operatorname{ch}a$ $\frac{\operatorname{ch}(n\operatorname{Arch}t)}{\sqrt{t^2-1}}$ при $t>\operatorname{ch}a$ $a>0$
27.52	$pS_n(a,p)$	0 при $0<t<\operatorname{sh}a$ $\frac{\operatorname{ch}(n\operatorname{Arsh}t)}{\sqrt{t^2-1}}$ при $t>\operatorname{sh}a$ $a>0$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
27.53	$pS(\nu, p)$	$\dfrac{1}{(t+1)^\nu}$
27.54	$pS(1, ip)\,S(1, -ip)$	$-\dfrac{1}{t}\ln(t^2+1)$
27.55	$pS(1, p)\,S(1, -p)$	$-\dfrac{1}{t}\ln(1-t^2)$
27.56	$\int_p^\infty K_0(as)\,ds$	0 при $t<\alpha$ $\dfrac{1}{\alpha}\left(\dfrac{\pi}{2}-\arcsin\dfrac{\alpha}{t}\right)$ при $t>\alpha$, $\alpha>0$
27.57	$e^{-p\sqrt{\alpha^2+\beta^2}}-\alpha\int_p^\infty \operatorname{ch}\beta(p-u)\times$ $\times K_0(u\sqrt{\alpha^2+\beta^2})\,du$	0 при $t<\sqrt{\alpha^2+\beta^2}$ $\dfrac{2}{\pi}\arcsin\dfrac{\alpha}{\sqrt{t^2-\beta^2}}$ при $t>\sqrt{\alpha^2+\beta^2}$, $\alpha>0$

§ 28. Вырожденные гипергеометрические функции

28.1	$\dfrac{p\operatorname{erf}(\sqrt{\alpha(p+a)})}{\sqrt{p+a}}$	0 при $t>\alpha$ $\dfrac{e^{-at}}{\sqrt{\pi t}}$ при $t<\alpha$
28.2	$e^{p^2}[\operatorname{erf}(p)-\operatorname{erf}(p+\alpha)]$	$\operatorname{erf}\left(\dfrac{t}{2}\right)$ при $t<2\alpha$ $\operatorname{erf}(\alpha)$ при $t<2\alpha$
28.3	$p\operatorname{erf}\left(\dfrac{1}{\sqrt{p}}\right)$	$\dfrac{\sin 2\sqrt{t}}{\pi t}$
28.4	$\sqrt{p}\,e^{\frac{1}{p}}\operatorname{erf}\left(\dfrac{1}{\sqrt{p}}\right)$	$\dfrac{\operatorname{sh} 2\sqrt{t}}{\sqrt{\pi t}}$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
28.5	$\sqrt{p}\, e^{-\frac{1}{p}} \operatorname{erf}\left(\frac{i}{\sqrt{p}}\right)$	$\frac{\sin 2\sqrt{t}}{\sqrt{\pi t}}$
28.6	$\frac{e^{\frac{1}{4p}}}{\sqrt{p}} \operatorname{erf}\left(\frac{1}{2\sqrt{p}}\right)$	$\frac{2}{\sqrt{\pi}}(\operatorname{ch}\sqrt{t}-1)$
28.7	$\frac{e^{-\frac{1}{4p}}\, i}{\sqrt{p}} \operatorname{erf}\left(\frac{i}{2\sqrt{p}}\right)=$ $=-\frac{2}{\sqrt{\pi}}\frac{e^{-\frac{1}{4p}}}{\sqrt{p}}\int\limits_0^{\frac{1}{2\sqrt{p}}} e^{s^2}\,ds$	$\frac{2}{\sqrt{\pi}}(\cos\sqrt{t}-1)$
28.8	$p\operatorname{erf}\left[\frac{1}{\sqrt{a(p+b)}}\right]$	$\frac{e^{-bt}}{\pi t}\sin\left(2\sqrt{\frac{t}{a}}\right), \quad a\neq 0$
28.9	$\frac{p}{\sqrt{p+b}}\exp\left[\frac{1}{a(p+b)}\right]\times$ $\times\operatorname{erf}\left[\frac{1}{\sqrt{a(p+b)}}\right]$	$\frac{e^{-bt}}{\pi t}\operatorname{sh}\left(2\sqrt{\frac{t}{a}}\right), \quad a\neq 0$
28.10	$\frac{p}{\sqrt{(p+b)^3}}\exp\left[\frac{1}{a(p+b)}\right]\times$ $\times\operatorname{erf}\left[\frac{1}{\sqrt{a(p+b)}}\right]+$ $+\sqrt{\frac{a}{\pi}}\cdot\frac{p}{p+b}$	$\sqrt{\frac{a}{\pi}}\,e^{-bt}\operatorname{ch}\left(2\sqrt{\frac{t}{a}}\right), \quad a\neq 0$
28.11	$pe^{ap^2}\operatorname{erfc}(\sqrt{a}\,p)$	$\frac{\exp\left(-\frac{t^2}{4a}\right)}{\sqrt{\pi a}}, \quad \operatorname{Re} a>0$
28.12	$pe^{ap^2}\operatorname{erfc}\left(\sqrt{a}\,p+\frac{b}{2\sqrt{a}}\right)$	0 при $0<t<b$ $\frac{\exp\left(-\frac{t^2}{4a}\right)}{\sqrt{\pi a}}$ при $t>b$ $\operatorname{Re} a>0,\ b>0$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt} f(t)\,dt$	$f(t)$
28.13	$e^{p^2}\operatorname{erfc}(p)$	$\operatorname{erf}\left(\frac{t}{2}\right)$
28.14	$\frac{pe^{p^2}}{p-a}\operatorname{erfc}(p)$	$e^{a(t+a)}\left[\operatorname{erf}\left(\frac{t}{2}+a\right)-\operatorname{erf}(a)\right]$
28.15	$\frac{p\exp\left(\frac{p^2}{4a^2}\right)}{p-a}\operatorname{erfc}\left(\frac{p}{2a}\right)$	$e^{at+\frac{1}{4}}\left[\operatorname{erf}\left(at+\frac{1}{2}\right)-\operatorname{erf}\left(\frac{1}{2}\right)\right]$
28.16	$e^{p^2}\operatorname{erfc}(p+\alpha)$	0 при $t<2\alpha$ $\operatorname{erf}\left(\frac{t}{2}\right)-\operatorname{erf}(\alpha)$ при $t>2\alpha$ $\alpha>0$
28.17	$e^{p^2}[\operatorname{erf}(p)-\operatorname{erf}(p+b)]$	$\operatorname{erf}\left(\frac{t}{2}\right)$ при $0<t<2b$ $\operatorname{erf}(b)$ при $t>2b$
28.18	$p\exp[\alpha(p+\beta)^2]\operatorname{erfc}[\sqrt{\alpha}(p+\beta)]$	$\frac{\exp\left(-\beta t-\frac{t^2}{4\alpha}\right)}{\sqrt{\pi\alpha}}$, $\operatorname{Re}\beta>0$
28.19	$p(p+\beta)\exp[\alpha(p+\beta)^2]\times$ $\times\operatorname{erfc}[\sqrt{\alpha}(p+\beta)]-\frac{p}{\sqrt{\pi\alpha}}$	$-\frac{1}{2}\frac{t}{\sqrt{\pi\alpha^3}}\exp\left(-\beta t-\frac{t^2}{4\alpha}\right)$ $\operatorname{Re}\alpha>0$
28.20	$\frac{p}{p+a}\exp[\alpha(p+a)^2]\times$ $\times\operatorname{erfc}[\sqrt{\alpha}(p+a)]$	$e^{-at}\operatorname{erf}\left(\frac{t}{2\sqrt{\alpha}}\right)$
28.21	$p\operatorname{erfc}(\sqrt{\alpha p})$	0 при $t<\alpha$ $\frac{1}{\pi t}\sqrt{\frac{\alpha}{t-\alpha}}$ при $t>\alpha$, $\alpha>0$
28.22	$pe^{\alpha p}\operatorname{erfc}(\sqrt{\alpha p})$	$\frac{1}{\pi}\sqrt{\frac{\alpha}{t}}\cdot\frac{1}{(t+\alpha)}$, $\alpha>0$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
28.23	$pe^{-bp}-\sqrt{\pi b}\,p\sqrt{p}\,\mathrm{erfc}(\sqrt{bp})$	0 при $0<t<b$ $\frac{1}{2}\sqrt{b}\frac{1}{t\sqrt{t}}$ при $t>b,\ b>0$
28.24	$\sqrt{p}\,\mathrm{erfc}(\sqrt{\alpha p})$	0 при $t<\alpha$ $\frac{1}{\sqrt{\pi t}}$ при $t>\alpha,\ \alpha>0$
28.25	$\sqrt{p}\,\mathrm{erf}(\sqrt{\alpha p})$	$\frac{1}{\sqrt{\pi t}}$ при $t<\alpha$ 0 при $t>\alpha,\ \alpha>0$
28.26	$\sqrt{p}\,e^{p}\,\mathrm{erfc}(\sqrt{p})$	$\frac{1}{\sqrt{\pi(t+1)}}$
28.27	$\frac{e^{\alpha^2 p}}{\sqrt{p}}\,\mathrm{erfc}(\alpha\sqrt{p})$	$\frac{2}{\sqrt{\pi}}(\sqrt{t^2+\alpha^2}-\alpha)$
28.28	$pe^{\alpha p^2}\,\mathrm{erfc}(\sqrt{\alpha p})$	$\chi(t,\alpha)$
28.29	$\frac{p}{\sqrt{\pi\alpha}}-p^2e^{\alpha p^2}\,\mathrm{erfc}(\sqrt{\alpha p})$	$\psi(t,\alpha)$
28.30	$p-p\sqrt{\pi a p}\,e^{ap}\,\mathrm{erfc}(\sqrt{ap})$	$\frac{\sqrt{a}}{2}\frac{1}{\sqrt{(t+a)^3}}$, $\lvert\arg a\rvert<\pi$
28.31	$\sqrt{p}\,e^{ap}\,\mathrm{erfc}(\sqrt{ap})$	$\frac{1}{\sqrt{\pi(t+a)}}$, $\lvert\arg a\rvert<\pi$
28.32	$p^{1-\nu}e^{ap}\,\mathrm{erfc}(\sqrt{ap})$	$\frac{t^{\nu-\frac{1}{2}}\,{}_2F_1\left(1,\frac{1}{2};\ \nu+\frac{1}{2};\ -\frac{t}{a}\right)}{\Gamma\left(\nu+\frac{1}{2}\right)\sqrt{\pi a}}$ $\mathrm{Re}\,\nu>-\frac{1}{2}$, $\lvert\arg a\rvert<\pi$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
28.33	$\frac{1}{p\sqrt{p}}e^{\frac{a}{p}}\operatorname{erf}\left(\sqrt{\frac{a}{p}}\right)$	$\frac{\sqrt{t}}{a\sqrt{\pi}}\operatorname{sh}(2\sqrt{at})-\frac{t}{\sqrt{\pi a}}-$ $-\frac{1}{2a\sqrt{a\pi}}[\operatorname{ch}(2\sqrt{at})-1]$
28.34	$\frac{e^{\frac{a}{p}}\operatorname{erfc}\left(\sqrt{\frac{a}{p}}\right)}{p^{\nu}}$	$\left(\frac{t}{a}\right)^{\frac{\nu}{2}}[I_\nu(2\sqrt{at})-\mathbf{L}_\nu(2\sqrt{at})]$ $\operatorname{Re}\nu>-1$
28.35	$\frac{e^{\frac{a}{p}}\operatorname{erf}\left(\sqrt{\frac{a}{p}}\right)}{p^{\nu}}$	$\left(\frac{t}{a}\right)^{\frac{\nu}{2}}\mathbf{L}_\nu(2\sqrt{at})$, $\operatorname{Re}\nu>-1$
28.36	$p\operatorname{erfc}[\sqrt{\alpha(p+\beta)}]$	0 при $t<\alpha$ $\frac{\sqrt{\alpha}\,e^{-\beta t}}{\pi t\sqrt{t-\alpha}}$ при $t>\alpha$
28.37	$p\left\{\operatorname{erfc}[\sqrt{a(p+b)}]-\right.$ $\left.-\frac{e^{-a(p+b)}}{\sqrt{\pi a(p+b)}}\right\}$	0 при $t<a$ $-\frac{e^{-bt}\sqrt{t-a}}{\pi\sqrt{a}\,t}$ при $t>a$
28.38	$p\left\{\sqrt{p+\alpha}\operatorname{erfc}[\sqrt{a(p+\alpha)}]-\right.$ $\left.-\frac{e^{-a(p+\alpha)}}{\sqrt{\pi a}}\right\}$	0 при $t<a$ $-\frac{e^{-\alpha t}}{2t\sqrt{\pi t}}$ при $t>a$
28.39	$\frac{p}{\sqrt{p+a}}\exp(\alpha^2 p)\operatorname{erfc}[\alpha\sqrt{p+a}]$	$\frac{\exp[-a(t+\alpha^2)]}{\sqrt{\pi(t+\alpha^2)}}$
28.40	$\frac{p}{\sqrt{p+a}}\operatorname{erfc}[\sqrt{\alpha(p+a)}]$	0 при $t<\alpha$ $\frac{e^{-at}}{\sqrt{\pi t}}$ при $t>\alpha$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
28.41	$pe^{\alpha^2 p}\operatorname{erfc}(\alpha\sqrt{p+\beta})$	$\dfrac{\alpha\exp[-\beta(t+\alpha^2)]}{\pi\sqrt{t}(t+\alpha^2)},\quad \alpha>0$
28.42	$\sqrt{p}\,e^{\frac{1}{p}}\operatorname{erfc}\left(\dfrac{1}{\sqrt{p}}\right)$	$\dfrac{e^{-2\sqrt{t}}}{\sqrt{\pi t}}$
28.43	$\sqrt{p}\exp\left(\dfrac{1}{p}\right)\operatorname{erfc}\left(-\dfrac{1}{\sqrt{p}}\right)$	$\dfrac{e^{2\sqrt{t}}}{\sqrt{\pi t}}$
28.44	$\dfrac{e^{\frac{1}{4p}}}{\sqrt{p}}\operatorname{erfc}\left(\dfrac{1}{2\sqrt{p}}\right)$	$\dfrac{2}{\sqrt{\pi}}(1-e^{-\sqrt{t}})$
28.45	$\dfrac{1}{\sqrt{p}}\exp\left(\dfrac{1}{ap}\right)\operatorname{erfc}\left(\dfrac{1}{\sqrt{ap}}\right)$	$\sqrt{\dfrac{a}{\pi}}-\sqrt{\dfrac{a}{\pi}}\exp\left(-2\sqrt{\dfrac{t}{a}}\right)$ $\operatorname{Re}a\neq 0$
28.46	$\dfrac{e^{\frac{1}{4p}}}{\sqrt{p}}\operatorname{erfc}\left(-\dfrac{1}{2\sqrt{p}}\right)$	$\dfrac{2}{\sqrt{\pi}}(e^{\sqrt{t}}-1)$
28.47	$\left(\dfrac{1}{p\sqrt{p}}+\dfrac{a}{2\sqrt{p}}\right)\exp\left(\dfrac{1}{ap}\right)\times$ $\times\operatorname{erfc}\left(\dfrac{1}{\sqrt{ap}}\right)-\dfrac{1}{p}\sqrt{\dfrac{a}{\pi}}$	$a\sqrt{\dfrac{t}{\pi}}\exp\left(-2\sqrt{\dfrac{t}{a}}\right)$
28.48	$\dfrac{p}{\sqrt{p+b}}\exp\left[\dfrac{1}{a(p+b)}\right]\times$ $\times\operatorname{erfc}\left[\dfrac{1}{\sqrt{a(p+b)}}\right]$	$\dfrac{\exp\left(-bt-2\sqrt{\dfrac{t}{a}}\right)}{\sqrt{\pi t}}$
28.49	$\dfrac{p}{\sqrt{(p+b)^3}}\exp\left[\dfrac{1}{a(p+b)}\right]\times$ $\times\operatorname{erfc}\left[\dfrac{1}{\sqrt{a(p+b)}}\right]-\dfrac{p}{p+b}\sqrt{\dfrac{a}{\pi}}$	$-\sqrt{\dfrac{a}{\pi}}\exp\left(-bt-2\sqrt{\dfrac{t}{a}}\right)$ $a\neq 0$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt} f(t)\,dt$	$f(t)$
28.50	$p\left\{\left[\frac{1}{\sqrt{(p+b)^5}}+\frac{a}{2\sqrt{(p+b)^3}}\right]\times \times\exp\left[\frac{1}{a(p+b)}\right]\times \times\operatorname{erfc}\left[\frac{1}{\sqrt{a(p+b)}}\right]-\sqrt{\frac{a}{\pi}}\frac{1}{(p+b)^2}\right\}$	$a\sqrt{\frac{t}{\pi}}\exp\left(-bt-2\sqrt{\frac{t}{a}}\right)$ $a\neq 0$
28.51	$p^{n+1}\exp\left(\frac{p^2}{4}\right)D_{-n-1}(p).$	$\frac{d^n}{dt^n}\left(e^{-\frac{t^2}{2}}\frac{t^n}{n!}\right)$
28.52	$p\exp\left(\frac{p^2}{4a^2}\right)D_{-\nu}\left(\frac{p}{a}\right)$	$\frac{a^\nu}{\Gamma(\nu)}t^{\nu-1}\exp\left(-\frac{a^2t^2}{2}\right),\quad \operatorname{Re}\nu>0$
28.53	$p\,\exp\left[\frac{1}{4}\alpha(p+\beta)^2\right]\times \times D_{-\nu}[\sqrt{\alpha}(p+\beta)]$	$\frac{t^{\nu-1}}{\alpha^{\frac{\nu}{2}}\Gamma(\nu)}\exp\left(-\beta t-\frac{t^2}{2\alpha}\right)$ $\operatorname{Re}\alpha>0,\ \operatorname{Re}\nu>0$
28.54	$\frac{p}{p+a}\exp\left[\frac{\alpha}{4}(p+a)^2\right]\times \times D_{-\nu}[\sqrt{\alpha}(p+\alpha)]$	$\frac{2^{\frac{\nu}{2}-1}}{\Gamma(\nu)}e^{-at}\gamma\left(\frac{\nu}{2},\ \frac{t^2}{2\alpha}\right)$
28.55	$p^{m+1}\exp\left(\frac{p^2}{4}-\frac{\alpha}{p}\right)D_{-m-n-1}(p)$	$\frac{1}{\Gamma(m+n+1)}\sqrt{\frac{2}{\pi}}\times \times\int_0^\infty U_n(2ut,\ 2\sqrt{\alpha t})\,u^m D_{m+n}(u)\times \times\exp\left(-\frac{u^2}{4}\right)du,\quad 0<m+n<1$
28.56	$pD_\nu(\sqrt{p})$	0 при $t<\frac{1}{4}$ $\frac{\left(2t+\frac{1}{2}\right)^{\frac{\nu-1}{2}}}{\Gamma\left(-\frac{\nu}{2}\right)\left(t-\frac{1}{4}\right)^{1+\frac{\nu}{2}}}$ при $t>\frac{1}{4}$ $\operatorname{Re}\nu>0$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
28.57	$p\exp\left(\frac{p}{2}\right)D_{-\nu}(\sqrt{2p})$	$\frac{t^{\frac{\nu}{2}-1}}{2^{\frac{\nu}{2}}\Gamma\left(\frac{\nu}{2}\right)(1+t)^{\frac{\nu+1}{2}}}$, $\operatorname{Re}\nu>0$
28.58	$\sqrt{p}\exp\left(\frac{p}{4}\right)D_{-\nu}(\sqrt{p})$	$\frac{t^{\frac{\nu-1}{2}}}{\Gamma\left(\frac{\nu+1}{2}\right)(2t+1)^{\frac{\nu}{2}}}$, $\operatorname{Re}\nu>-1$
28.59	$pD_{-\nu}[\sqrt{\alpha(p+\beta)}]$	0 при $t<\frac{\alpha}{4}$ $\frac{\sqrt{\alpha}\,e^{-\beta t}\left(t-\frac{\alpha}{4}\right)^{\frac{\nu}{2}-1}}{2^{\frac{\nu+1}{2}}\Gamma\left(\frac{\nu}{2}\right)\left(t+\frac{\alpha}{4}\right)^{\frac{\nu+1}{2}}}$ при $t>\frac{\alpha}{4}$, $\alpha>0$
28.60	$p\exp\left(\frac{\alpha^2 p}{4}\right)D_{-\nu}(\alpha\sqrt{p+\beta})$	$\frac{\alpha t^{\frac{\nu-2}{2}}\exp\left[-\beta\left(t+\frac{\alpha^2}{4}\right)\right]}{2^{\frac{\nu+1}{2}}\Gamma\left(\frac{\nu}{2}\right)\left(t+\frac{\alpha^2}{2}\right)^{\frac{\nu+1}{2}}}$ $\alpha>0$
28.61	$\frac{p}{\sqrt{p+\frac{1}{a}}}\exp\left(\frac{ap+1}{2a}\right)\times$ $\times D_{-\nu}\left(\sqrt{2p+\frac{2}{a}}\right)$	$\frac{\exp\left(-\frac{t}{2}\right)t^{\frac{\nu}{2}-1}}{2^{\frac{\nu}{2}}\Gamma\left(\frac{\nu+1}{2}\right)(1+t)^{\frac{\nu}{2}}}$, $\operatorname{Re}\nu>0$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
28.62	$\frac{p}{\sqrt{p+a}}D_{1-\nu}[\sqrt{\alpha(p+a)}]$	0 при $t<\frac{\alpha}{4}$ $\frac{e^{-at}\left(t-\frac{\alpha}{4}\right)^{\frac{\nu}{2}-1}}{2^{\frac{\nu-1}{2}}\Gamma\left(\frac{\nu}{2}\right)\left(t+\frac{\alpha}{4}\right)^{\frac{\nu-1}{2}}}$ при $t>\frac{\alpha}{4}$ $\operatorname{Re}\nu>0,\ \alpha>0$
28.63	$\frac{p}{\sqrt{p+a}}\exp\left(\frac{\alpha^2p}{4}\right)\times$ $\times D_{1-\nu}[\alpha\sqrt{p+a}]$	$\frac{t^{\frac{\nu}{2}-1}\exp\left[-a\left(t+\frac{\alpha^2}{4}\right)\right]}{2^{\frac{\nu-1}{2}}\Gamma\left(\frac{\nu}{2}\right)\left(t+\frac{\alpha^2}{2}\right)^{\frac{\nu-1}{2}}}$ $\operatorname{Re}\nu>0$
28.64	$\sqrt{p}\,D_{1-2\nu}(2\sqrt{\alpha p})$	0 при $0<t<\alpha$ $\frac{2^{\frac{1}{2}-\nu}(t-\alpha)^{\nu-1}}{\Gamma(\nu)(t+\alpha)^{\nu-\frac{1}{2}}}$ при $t>\alpha$ $\operatorname{Re}\nu>0,\ \alpha>0$
28.65	$2^{p+\nu}p\Gamma(p+\nu)D_{-2p}(a)$	$e^{\frac{t}{2}}(e^t-1)^{-\nu-\frac{1}{2}}\times$ $\times\exp\left[-\frac{a^2e^{-t}}{4(1-e^{-t})}\right]\times$ $\times D_{2\nu}\left[\frac{a}{\sqrt{1-e^{-t}}}\right],\quad \lvert\arg a\rvert<\frac{\pi}{4}$
28.66	$\frac{e^{-\frac{1}{4p}}}{p^{n-\frac{1}{2}}}D_{2n}\left(\frac{1}{\sqrt{p}}\right)$	$(-1)^n\frac{(2t)^n}{\sqrt{\pi t}}\cos\sqrt{2t}$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
28.67	$\dfrac{e^{-\frac{1}{4p}}}{p^n} D_{2n+1}\left(\dfrac{1}{\sqrt{p}}\right)$	$(-1)^n \dfrac{(2t)^{n+\frac{1}{2}}}{\sqrt{\pi t}} \sin\sqrt{2t}$
28.68	$\dfrac{e^{\frac{1}{8p}}}{p^{\frac{\nu-1}{2}}} D_{-(\nu+1)}\left(\dfrac{1}{\sqrt{2p}}\right)$	$\dfrac{(2t)^{\frac{\nu-1}{2}} e^{-\sqrt{t}}}{\Gamma(\nu+1)}$, $\operatorname{Re}\nu>-1$
28.69	$p^{1-\frac{\nu}{2}} \exp\left(\dfrac{1}{4a^2p}\right) D_{-\nu}\left(\dfrac{1}{a\sqrt{p}}\right)$	$\dfrac{(2t)^{\frac{\nu-2}{2}}}{\Gamma(\nu)} \exp\left(-\dfrac{\sqrt{2t}}{a}\right)$ $\operatorname{Re}\nu>0,\ a\neq 0$
28.70	$\dfrac{p}{(p+a)^{\frac{\nu}{2}}} \exp\left[\dfrac{1}{4b(p+a)}\right] \times$ $\times D_{-\nu}\left[\dfrac{1}{\sqrt{b(p+a)}}\right]$	$\dfrac{(2t)^{\frac{\nu-2}{2}}}{\Gamma(\nu)} \exp\left(-at-\sqrt{\dfrac{2t}{b}}\right)$ $\operatorname{Re}\nu>0$
28.71	$p^{\frac{\nu}{2}+1} e^{-\frac{1}{4p}} \left[D_\nu\left(\dfrac{i}{\sqrt{p}}\right)+\right.$ $\left.+D_\nu\left(\dfrac{-i}{\sqrt{p}}\right)\right]$	$\dfrac{\cos\sqrt{2t}}{\Gamma(-\nu)\,t\,(2t)^{\frac{\nu}{2}}}$, $\operatorname{Re}\nu<0$
28.72	$p^{\frac{\nu+1}{2}} \exp\left(-\dfrac{1}{4ap}\right) \times$ $\times \left[D_{-\nu}\left(\dfrac{1}{\sqrt{ap}}\right)+\right.$ $\left.+D_{-\nu}\left(-\dfrac{1}{\sqrt{ap}}\right)\right]$	$\dfrac{2^{-\frac{\nu}{2}+1} \sin\left[\dfrac{\pi}{2}(1-\nu)\right]}{\sqrt{\pi}} \times$ $\times t^{-\frac{\nu+1}{2}} \cos\left(\sqrt{\dfrac{2t}{a}}\right)$, $\operatorname{Re}\nu>0$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
28.73	$\frac{p}{(p+a)^{-\frac{\nu}{2}}}\exp\left[\frac{1}{4b(p+a)}\right]\times$ $\times\left\{D_\nu\left[-\frac{1}{\sqrt{b(p+a)}}\right]-\right.$ $\left.-D_\nu\left[\frac{1}{\sqrt{b(p+a)}}\right]\right\}$	$\frac{2^{-\frac{\nu}{2}}}{\Gamma(\nu)}e^{-at}t^{-\frac{\nu}{2}-1}\operatorname{sh}\left(\sqrt{\frac{2t}{b}}\right)$
28.74	$\frac{p}{(p+a)^{\frac{\nu}{2}}}\exp\left[\frac{1}{4b(p+a)}\right]\times$ $\times D_{-\nu}\left[-\frac{1}{\sqrt{b(p+a)}}\right]+$ $+D_{-\nu}\left[\frac{1}{\sqrt{b(p+a)}}\right]\Big\}$	$\frac{2^{\frac{\nu}{2}}}{\Gamma(\nu)}e^{-at}t^{\frac{\nu}{2}-1}\operatorname{ch}\left(\sqrt{\frac{2t}{b}}\right)$
28.75	$p^{\frac{1-\nu}{2}}\exp\left(-\frac{1}{4ap}\right)\times$ $\times\left[D_\nu\left(-\frac{1}{\sqrt{ap}}\right)-D_\nu\left(\frac{1}{\sqrt{ap}}\right)\right]$	$\frac{2^{\frac{\nu}{2}+1}\sin\left[\frac{\pi}{2}\left(\frac{\nu}{2}+1\right)\right]}{\sqrt{\pi}}\times$ $\times t^{\frac{\nu-1}{2}}\sin\left(\sqrt{\frac{2t}{a}}\right),\quad \operatorname{Re}\nu>0$
28.76	$pD_{-1}\left(\frac{ip}{\sqrt{2i}}\right)D_{-1}\left(\frac{p}{\sqrt{2i}}\right)$	$\frac{2}{t}\sin t^2$
28.77	$pD_{-\nu-1}(p)\,D_{-\nu-1}(-p)$	$\frac{(-1)^\nu\sqrt{\pi}}{\Gamma(\nu+1)}I_{\nu+\frac{1}{2}}\left(\frac{t^2}{2}\right)$ $\operatorname{Re}\nu>-1$
28.78	$pD_{-\nu-1}(e^{\frac{i\pi}{4}}p)\,D_{-\nu-1}(e^{-\frac{i\pi}{4}}p)$	$\frac{\sqrt{\pi}}{\Gamma(\nu+1)}J_{\nu+\frac{1}{2}}\left(\frac{t^2}{2}\right),\quad \operatorname{Re}\nu>-1$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
28.79	$pD_\nu(\sqrt{2ip})\,D_\nu(\sqrt{-2ip})$	$\dfrac{t^\nu}{\sqrt{2}\,\Gamma(-\nu)\sqrt{t^2+1}}\times$ $\times(\sqrt{t^2+1}-1)^{-\nu-\frac{1}{2}}$
28.80	$pe^pD_{\nu-\frac{1}{2}}(\sqrt{2p})\,D_{-\nu-\frac{1}{2}}(\sqrt{2p})$	$\dfrac{\cos\left\{\nu\arccos\dfrac{1}{1+t}\right\}}{\sqrt{\pi t(t+1)(t+2)}}$
28.81	$\sqrt{p}e^{\frac{\alpha+\beta}{2}p}D_{4\mu}(\sqrt{2\alpha p})\,D_{4\nu}(\sqrt{2\beta p})$	$2^{-\frac{1}{2}}t^{-\mu-\nu-\frac{1}{4}}(t+\alpha)^{\mu-\nu-\frac{1}{4}}\times$ $\times(t+\beta)^{\nu-\mu-\frac{1}{4}}\times$ $\times(-t-\alpha-\beta)^{\mu+\nu+\frac{1}{4}}\times$ $\times P^{\nu+\mu+\frac{1}{4}}_{2\nu-2\mu-\frac{1}{2}}\left(\sqrt{\dfrac{\alpha\beta}{(t+\alpha)(t+\beta)}}\right)$ $\operatorname{Re}(\mu+\nu)<\frac{1}{4},\ \lvert\arg\alpha\rvert<\pi$ $\lvert\arg\beta\rvert<\pi$
28.82	$\dfrac{\exp\left(-\dfrac{1}{2p}\right)}{p^n}\operatorname{He}_{2n+1}\left(\dfrac{1}{\sqrt{p}}\right)$	$(-1)^n\dfrac{(2t)^{n+\frac{1}{2}}}{\sqrt{\pi t}}\sin\sqrt{2t}$
28.83	$\dfrac{\exp\left(-\dfrac{1}{2p}\right)}{p^{n-\frac{1}{2}}}\operatorname{He}_{2n}\left(\dfrac{1}{\sqrt{p}}\right)$	$(-1)^n\dfrac{(2t)^n}{\sqrt{\pi t}}\cos\sqrt{2t}$
28.84	$\dfrac{\exp\left(-\dfrac{1}{p}\right)}{p^\nu}L_\nu\left(\dfrac{1}{p}\right)$	$\dfrac{t^\nu}{\Gamma(\nu+1)}J_0(2\sqrt{t}),\ \operatorname{Re}\nu>-1$
28.85	$\dfrac{\exp\left(-\dfrac{\beta}{p}\right)}{p^{n+\alpha}}L_n^{(\alpha)}\left(\dfrac{\beta}{p}\right)$	$\dfrac{t^{n+\frac{\alpha}{2}}}{\beta^{\frac{\alpha}{2}}n!}J_\alpha(2\sqrt{\beta t}),\quad \operatorname{Re}\alpha>-1$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
28.86	$\dfrac{(p-1)^n \exp\left(-\dfrac{1}{2p}\right)}{p^{n+\nu}}\times$ $\times\ L_n^{(\nu)}\left[\dfrac{1}{2p(1-p)}\right]$	$(2t)^{\frac{\nu+1}{2}} J_\nu(\sqrt{2t})\,L_n^{(\nu)}(t),\quad \operatorname{Re}\nu>0$
28.87	$\sqrt{p}\exp\left(-\dfrac{1}{2p}\right)M_{0,0}\left(\dfrac{1}{p}\right)$	$J_0^2(\sqrt{t})$
28.88	$p^{1-\beta}L_n^{(\alpha)}\left(\dfrac{\lambda}{p}\right)$	$\dfrac{t^{\beta-1}\,{}_1F_2(-n;\ \alpha+1,\ \beta;\ \lambda t)}{n\Gamma(\beta)\,\mathrm{B}(n,\ \alpha+1)}$ $\operatorname{Re}\beta>0$
28.89	$n!\,p^{-n-\alpha}e^{-\frac{\lambda}{p}}L_n^{(\alpha)}\left(\dfrac{\lambda}{p}\right)$	$\lambda^{-\frac{\alpha}{2}}t^{\frac{\alpha}{2}+n}J_\alpha(2\sqrt{\lambda t})$ $\operatorname{Re}\alpha>-n-1$
28.90	$p\mathrm{B}\left(n+\dfrac{1}{2},\ p+\dfrac{1}{2}\right)L_n^{(p)}(\lambda)$	$\dfrac{1}{(-2)^n n!}\,\dfrac{\mathrm{He}_{2n}(\sqrt{2\lambda(1-e^{-t})})}{\sqrt{e^t-1}}$
28.91	$p\mathrm{B}\left(n+\dfrac{3}{2},\ p\right)L_n^{(p)}(\lambda)$	$\dfrac{(-1)^n}{n!}2^{-n-\frac{1}{2}}\dfrac{\mathrm{He}_{2n+1}(\sqrt{2\lambda(1-e^{-t})})}{\sqrt{\pi\lambda}}$
28.92	$\dfrac{\exp\left(-\dfrac{1}{2p}\right)}{p^{k-1}}M_{k,\mu}\left(\dfrac{1}{p}\right)$	$\dfrac{\Gamma(2\mu+1)}{\Gamma\left(\mu+k+\dfrac{1}{2}\right)}t^{k-\frac{1}{2}}J_{2\mu}(2\sqrt{t})$ $\operatorname{Re}\left(\mu+k+\dfrac{1}{2}\right)>0$
28.93	$p^\mu\exp\left(-\dfrac{1}{2ap}\right)\times$ $\times\ M_{1-\mu,\ \nu+\mu-\frac{3}{2}}\left(\dfrac{1}{ap}\right)$	$\dfrac{\Gamma(2\nu+2\mu-2)}{\sqrt{a}\,\Gamma(\nu)\,t^{\mu-\frac{1}{2}}}\times$ $\times J_{2\nu+2\mu-3}\left(2\sqrt{\dfrac{t}{a}}\right),\quad \operatorname{Re}\mu>\dfrac{1}{4}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
28.94	$p(p+b)^{-\mu}C_n^{\nu}\left(\frac{p+a}{p+b}\right)$	$\frac{t^{\mu-1}\exp(-bt)}{nB(n,2\nu)\Gamma(\mu)}\times$ $\times{}_2F_2\left[-n,n+2\nu;\mu,\nu+\frac{1}{2};\frac{b-a}{2}t\right]$, $\operatorname{Re}\mu>0$, $\operatorname{Re}\nu>0$
28.95	$\frac{p}{(p+b)^{\mu-\nu}}\exp\left[\frac{1}{2a(p+b)}\right]\times$ $\times M_{\nu-\mu,\,\nu-\frac{1}{2}}\left[\frac{1}{a(p+b)}\right]$	$\frac{\Gamma(2\nu)}{\sqrt{a}\,\Gamma(\mu)}e^{-bt}t^{\mu-\nu-1}\times$ $\times I_{2\nu-1}\left(2\sqrt{\frac{t}{a}}\right)$, $\operatorname{Re}\mu>1$
28.96	$W_{k,\mu}(p)$	0 при $t<\frac{1}{2}$ $\left(\frac{2t+1}{2t-1}\right)^{\frac{k}{2}}P^k_{\mu-\frac{1}{2}}(2t)$ при $t>\frac{1}{2}$ $\mu-\frac{1}{2}\neq 0,\pm1,\pm2,\ldots$ $\operatorname{Re}k>1$
28.97	$\frac{1}{p^{\mu-\frac{1}{2}}}W_{k,\mu}(p)$	0 при $t<\frac{1}{2}$ $\frac{\left(t-\frac{1}{2}\right)^{\mu-k-\frac{1}{2}}}{\Gamma\left(\mu+\frac{1}{2}-k\right)\left(t+\frac{1}{2}\right)^{-\mu-k+\frac{1}{2}}}$ при $t>\frac{1}{2}$, $\operatorname{Re}\left(\mu+\frac{1}{2}-k\right)>0$
28.98	$\frac{\exp\left(\frac{p}{2}\right)}{p^{\mu-\frac{1}{2}}}W_{k,\mu}(p)$	$\frac{t^{\mu-k-\frac{1}{2}}(1+t)^{\mu+k-\frac{1}{2}}}{\Gamma\left(\mu-k+\frac{1}{2}\right)}$ $\operatorname{Re}\left(\mu-k+\frac{1}{2}\right)>0$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
28.99	$\dfrac{p}{(p+b)^{\nu}}\exp\left(\dfrac{\alpha p}{2}\right)\times$ $\times W_{\nu-\mu,\,\nu-\frac{1}{2}}[\alpha(p+b)]$	$\exp\left[-b\left(t+\dfrac{\alpha}{2}\right)\right]\times$ $\times\dfrac{t^{\mu-1}(t+\alpha)^{2\nu-\mu-1}}{\alpha^{2(\nu-1)}\Gamma(\mu)}$ $\operatorname{Re}\mu>0,\quad \alpha>0$
28.100	$\dfrac{p}{(p+b)^{\nu}}W_{\nu-\mu,\,\nu-\frac{1}{2}}[a(p+b)]$	0 при $t<\dfrac{a}{2}$ $\dfrac{e^{-bt}\left(t-\dfrac{a}{2}\right)^{\mu-1}\left(t+\dfrac{a}{2}\right)^{2\nu-\mu-1}}{a^{\nu-1}\Gamma(\mu)}$ при $t>\dfrac{a}{2}$
28.101	$p^{\frac{3}{2}-\nu}\exp\left(\dfrac{1}{2ap}\right)W_{\frac{1}{2}-\nu,\,0}\left(\dfrac{1}{ap}\right)$	$\dfrac{2t^{\nu-1}}{\sqrt{a}\,[\Gamma(\nu)]^2}K_0\left(2\sqrt{\dfrac{t}{a}}\right)$ $\operatorname{Re}\nu>0,\quad a>0$
28.102	$p^{\frac{3}{2}-\nu-\mu}\exp\left(\dfrac{1}{2ap}\right)\times$ $\times W_{\frac{1}{2}-\nu-\mu,\,\nu-\mu}\left(\dfrac{1}{ap}\right)$	$\dfrac{2t^{\nu+\mu-1}}{\sqrt{a}\,\Gamma(2\nu)\Gamma(2\mu)}\times$ $\times K_{2(\nu-\mu)}\left(2\sqrt{\dfrac{t}{a}}\right)$ $\operatorname{Re}\nu>0,\quad \operatorname{Re}\mu>0,\quad a>0$
28.103	$\dfrac{p}{(p+b)^{\nu+\mu-\frac{1}{2}}}\exp\left[\dfrac{1}{2a(p+b)}\right]\times$ $\times W_{\frac{1}{2}-\nu-\mu,\,\nu-\mu}\left[\dfrac{1}{a(p+b)}\right]$	$\dfrac{2e^{-bt}t^{\nu+\mu-1}}{\sqrt{a}\,\Gamma(2\nu)\Gamma(2\mu)}\times$ $\times K_{2(\nu-\mu)}\left(2\sqrt{\dfrac{t}{a}}\right)$ $\operatorname{Re}\nu>0,\quad \operatorname{Re}\mu>0,\quad a>0$
28.104	$\dfrac{p}{(p+b)^{\nu-\frac{1}{2}}}\exp\left[\dfrac{1}{2a(p+b)}\right]\times$ $\times W_{\frac{1}{2}-\nu,\,0}\left[\dfrac{1}{a(p+b)}\right]$	$\dfrac{2e^{-bt}t^{\nu-1}}{\sqrt{a}\,[\Gamma(\nu)]^2}K_0\left(2\sqrt{\dfrac{t}{a}}\right)$ $\operatorname{Re}\nu>0,\quad a>0$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
28.105	$p^{-2m}e^{\frac{p^2}{4}}W_{m-\nu,\,m}\left(\frac{p^2}{2}\right)$	$\frac{2^{\nu-m}t^{2\nu}}{\Gamma(2\nu+1)}\times$ $\times\,{}_1F_1\left(\frac{1}{2}+\nu-2m;\ \nu+1;\ -\frac{t^2}{2}\right)$ $\operatorname{Re}\nu>-\frac{1}{2}$
28.106	$\frac{p}{(p+b)^{2\nu}}\exp\left[\frac{a}{2}(p+b)^2\right]\times$ $\times W_{\nu-\mu,\,\nu-\frac{1}{2}}[a(p+b)^2]$	$\frac{2^{\mu+\frac{1}{2}}a^{\nu-\frac{\mu}{2}+\frac{1}{4}}t^{\mu-\frac{3}{2}}}{\Gamma(2\mu)}\times$ $\times\exp\left(-bt-\frac{t^2}{8a}\right)\times$ $\times M_{\frac{3}{4}-2\nu+\frac{\mu}{2},\,\frac{\mu}{2}-\frac{1}{4}}\left(\frac{t^2}{4a}\right)$
28.107	$\frac{p}{(p+b)^{2\nu+\frac{3}{4}}}\exp\left[\frac{a}{2}(p+b)^2\right]\times$ $\times W_{\frac{3}{8}-3\nu,\,\nu-\frac{1}{8}}[a(p+b)^2]$	$\frac{2^{8\nu-1}\Gamma\left(2\nu+\frac{3}{4}\right)}{a^{\nu-\frac{1}{8}}\Gamma(8\nu)}t^{4\nu-\frac{1}{2}}\times$ $\times\exp\left(-bt-\frac{t^2}{8a}\right)I_{2\nu-\frac{1}{4}}\left(\frac{t^2}{8a}\right)$
28.108	$W_{k,\,m}(ip)W_{k,\,m}(-ip)$	$\frac{t^{-2k}}{\Gamma(1-2k)}\,{}_2F_1\left(\frac{1}{2}-k+m,\right.$ $\left.\frac{1}{2}-k-m;\ 1-2k;\ -t^2\right)$
28.109	$p^{1-2\nu-2k}W_{k,\,m}(ip)W_{k,\,m}(-ip)$	$\frac{t^{2\nu-1}}{\Gamma(2\nu)}\,{}_4F_3\left(\frac{1}{2}-k+m,\ \frac{1}{2}-k-m,\right.$ $\frac{1}{2}-k,\ 1-k;\ 1-2k,\ \nu,$ $\left.\nu+\frac{1}{2};\ -t^2\right)$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
28.110	$p^{-\mu+\frac{1}{2}}e^{-\frac{a+b}{2}p}M_{k,\mu}[(b-a)p]$	0 при $0<t<a$ $\frac{(b-a)^{\frac{1}{2}-\mu}}{\mathrm{B}\left(\frac{1}{2}+k+\mu,\ \frac{1}{2}-k+\mu\right)}\times$ $\times\frac{(t-a)^{k+\mu-\frac{1}{2}}}{(b-t)^{k-\mu+\frac{1}{2}}}$ при $a<t<b$ 0 при $t>b$ $\mathrm{Re}(\mu\pm k)>-\frac{1}{2},\quad b>a\geqslant 0$
28.111	$p^{k+1}e^{\frac{\alpha}{2p}}M_{k,\mu}\left(\frac{a}{p}\right)$	$\frac{\sqrt{a}\,\Gamma(2\mu+1)}{\Gamma\left(\mu-k+\frac{1}{2}\right)}t^{-k-\frac{1}{2}}I_{2\mu}(2\sqrt{at})$ $\mathrm{Re}(k-\mu)<\frac{1}{2}$
28.112	$p\sqrt{p}M_{\frac{1}{4},\nu}\left(\frac{a}{p}\right)M_{-\frac{1}{4},\nu}\left(\frac{a}{p}\right)$ $\mathrm{Re}\,\nu>-\frac{1}{4}$	$2^{2\nu}\cdot a\frac{[\Gamma(2\nu+1)]^2}{\Gamma\left(2\nu+\frac{1}{2}\right)}\frac{1}{\sqrt{t}}\times$ $\times J_{2\nu}\left[e^{i\frac{\pi}{4}}\sqrt{2at}\right]\times$ $\times J_{2\nu}\left[e^{-\frac{i\pi}{4}}\sqrt{2at}\right]$
28.113	$\exp\left(\frac{ap}{2}\right)W_{k,\mu}(p)$	$\left(1+\frac{a}{t}\right)^{\frac{k}{2}}P^{k}_{\mu-\frac{1}{2}}\left(1+\frac{2t}{a}\right)$ $\lvert\arg a\rvert<\pi,\quad \mathrm{Re}\,k<1$
28.114	$p^{k+\frac{1}{2}}e^{\frac{p}{2}}W_{k,\mu}(p)$	$\frac{2^{-2k-\frac{1}{2}}t^{-k-\frac{1}{4}}}{\sqrt{1+t}}P^{2k+\frac{1}{2}}_{2\mu-\frac{1}{2}}(\sqrt{1+t})$ $\mathrm{Re}\,k<\frac{1}{4}$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
28.115	$p^k e^{\frac{p}{2}} W_{k,\mu}(p)$	$2^{-2k+\frac{1}{2}}\, t^{-k+\frac{1}{4}}\, P_{2\mu-\frac{1}{2}}^{2k-\frac{1}{2}}(\sqrt{1+t})$ $\operatorname{Re} k<\frac{3}{4}$
28.116	$p^{1-\sigma} e^{\frac{p}{2a}} W_{k,\mu}\left(\frac{p}{a}\right)$	$\frac{1}{a^k\,\Gamma(\sigma-k)}\, t^{\sigma-k-1}\times$ $\times\,{}_2F_1\left(\frac{1}{2}-k+\mu,\ \frac{1}{2}-k-\mu;\right.$ $\left.\sigma-k;\quad -at\right),\ \lvert\arg a\rvert<\pi$ $\operatorname{Re}(\sigma-k)>0$
28.117	$p^{-2\mu} e^{\frac{ap^2}{2}} W_{-3\mu,\mu}(ap^2)$	$2^{8\mu} a^{-\mu}\frac{\Gamma(2\mu+1)}{\Gamma(8\mu+1)}\, t^{4\mu}\times$ $\times\exp\left(-\frac{t^2}{8a}\right) I_{2\mu}\left(\frac{t^2}{8a}\right)$ $\operatorname{Re} a>0,\quad \operatorname{Re}\mu>-\frac{1}{8}$
28.118	$p^{-2\mu} e^{\frac{ap^2}{2}} W_{k,\mu}(ap^2)$	$\frac{2^{1-k+\mu} a^{\frac{\mu+k+1}{2}}}{\Gamma(1-2k+2\mu)}\, t^{\mu-k-1}\times$ $\times\exp\left(-\frac{t^2}{8a}\right) M_{-\frac{k+3\mu}{2},\,\frac{\mu-k}{2}}\left(\frac{t^2}{4a}\right)$ $\operatorname{Re} a>0,\ \operatorname{Re}(k-\mu)<\frac{1}{2}$
28.119	$p^{k+1} W_{k,\mu}\left(\frac{a}{p}\right)$	$\frac{2\sqrt{a}}{\Gamma\left(\frac{1}{2}-k+\mu\right)\Gamma\left(\frac{1}{2}-k-\mu\right)}\times$ $\times\, t^{-k-\frac{1}{2}} K_{2\mu}(2\sqrt{at})$ $\operatorname{Re}(k\pm\mu)<\frac{1}{2}$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
28.120	$p^{-3\mu+\frac{1}{2}}\exp\left(\frac{1}{2p}\right)W_{-\mu,\mu}\left(\frac{1}{p}\right)$	$\frac{2}{\Gamma\left(2\mu+\frac{1}{2}\right)}t^{2\mu}K_{2\mu}(\sqrt{t})\times$ $\times I_{2\mu}(\sqrt{t}),\quad \operatorname{Re}\mu>-\frac{1}{4}$
28.121	$p^{1-k}\exp\left(-\frac{1}{2p}\right)W_{k,\mu}\left(\frac{1}{p}\right)$	$-t^{k-\frac{1}{2}}\{J_{2\mu}(2\sqrt{t})\sin[(\mu-k)\pi]+$ $+Y_{2\mu}(2\sqrt{t})\cos[(\mu-k)\pi]\}$ $\operatorname{Re}(k\pm\mu)>-\frac{1}{2}$
28.122	$p\Gamma(k+p)W_{-p,\mu}(b)$	$be^t(e^t-1)^{-k-1}\exp\left[-\frac{b}{2(e^t-1)}\right]\times$ $\times W_{k,\mu}\left(\frac{b}{e^t-1}\right),\quad b>0$
28.123	$p^{1-\sigma}\exp\left(\frac{a}{2p}\right)W_{k,\mu}\left(\frac{a}{p}\right)$	$t^{\sigma-1}\left[\frac{\Gamma(-2\mu)(at)^{\mu+\frac{1}{2}}}{\Gamma\left(\frac{1}{2}-k-\mu\right)\Gamma\left(\frac{1}{2}+\mu+\sigma\right)}\times\right.$ $\times{}_1F_2\left(\frac{1}{2}-k+\mu;\ 1+2\mu,\ \frac{1}{2}+\right.$ $\left.+\mu+\sigma;\ at\right)+$ $+\frac{\Gamma(2\mu)(at)^{-\mu+\frac{1}{2}}}{\Gamma\left(\frac{1}{2}-k+\mu\right)\Gamma\left(\frac{1}{2}-\mu+\sigma\right)}\times$ $\times{}_1F_2\left(\frac{1}{2}-k-\mu;\ 1-2\mu,\ \frac{1}{2}-\right.$ $\left.\left.-\mu+\sigma;\ at\right)\right]$ $\operatorname{Re}\left(\frac{1}{2}\pm\mu+\sigma\right)>0$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
28.124	$e^p W_{k,0}(p)\,W_{-k,0}(p)$	$\frac{1}{1+t}P_{k-\frac{1}{2}}\left[\frac{2}{(1+t)^2}-1\right]$
28.125	$\exp\left(\frac{a+b}{2}p\right)W_{k,\mu-\frac{1}{2}}(ap)\times$ $\times W_{\lambda,\mu-\frac{1}{2}}(bp)$	$\frac{(ab)^\mu}{\Gamma(1-k-\lambda)}t^{-k-\lambda}(a+t)^{k-\mu}\times$ $\times(b+t)^{\lambda-\mu}{}_2F_1\left[\mu-k,\ \mu-\lambda;\ 1-k-\lambda;\ \frac{(a+b+t)\,t}{(a+t)(b+t)}\right]$ $\operatorname{Re}(1-k-\lambda)>0,\ \lvert\arg a\rvert<\pi$ $\lvert\arg b\rvert<\pi$
28.126	$p\sqrt{p}\,W_{\frac{1}{4},\nu}\left(\frac{ia}{p}\right)W_{\frac{1}{4},\nu}\left(-\frac{ia}{p}\right)$	$-\frac{4a\sqrt{\frac{\pi}{2t}}K_{2\nu}(\sqrt{2at})}{\Gamma\left(\frac{1}{4}+\nu\right)\Gamma\left(\frac{1}{4}-\nu\right)}\times$ $\times\left\{J_{2\nu}(\sqrt{2at})\sin\left[\left(\nu-\frac{1}{4}\right)\pi\right]+\right.$ $\left.+Y_{2\nu}(\sqrt{2at})\cos\left[\left(\nu-\frac{1}{4}\right)\pi\right]\right\}$ $\lvert\operatorname{Re}\nu\rvert<\frac{1}{4}$
28.127	$\frac{1}{\sqrt{p}}W_{k,\frac{1}{8}}\left(\frac{ip^2}{4a}\right)W_{k,\frac{1}{8}}\left(-\frac{ip^2}{4a}\right)$	$\sqrt{\frac{\pi^3 t}{2}}\times$ $\times\frac{J_{-k+\frac{1}{8}}\left(\frac{at^2}{2}\right)J_{-k-\frac{1}{8}}\left(\frac{at^2}{2}\right)}{\Gamma\left(\frac{3}{8}-k\right)\Gamma\left(\frac{5}{8}-k\right)}$ $\operatorname{Re}k<\frac{3}{8},\quad a>0$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
28.128	$pa^{-\frac{1+2\mu+p}{2}}\frac{\Gamma\left(\frac{1}{2}-k+\mu+p\right)}{\Gamma(1+2\mu+p)}\times$ $\times M_{k-\frac{p}{2},\,\mu+\frac{p}{2}}(a)$	$\frac{\exp\left[-\left(\frac{1}{2}+k+\mu\right)t\right]}{\Gamma\left(\frac{1}{2}+k+\mu\right)}\times$ $\times(1-e^{-t})^{k+\mu-\frac{1}{2}}\times$ $\times\exp\left[-a\left(\frac{1}{2}-e^{-t}\right)\right]$ $\operatorname{Re}\left(\frac{1}{2}+k+\mu\right)>0$
28.129	$p\Gamma\left(\frac{1}{2}-k-\mu+p\right)W_{k-p,\,\mu}(a)$	$a^{\frac{1}{2}-\mu}(e^t-1)^{2\mu-1}\times$ $\times\exp\left[-\frac{a}{2}+\left(\frac{1}{2}-k-\mu\right)t-\right.$ $\left.-\frac{a}{e^t-1}\right]$, $\operatorname{Re}a>0$
28.130	$\frac{p\Gamma\left(\frac{1}{2}+\mu+p\right)\Gamma\left(\frac{1}{2}-\mu+p\right)}{\Gamma(1-k+p)}\times$ $\times W_{-p,\,\mu}(a)$	$(1-e^{-t})^{-k}\exp\left[-\frac{\frac{a}{2}}{1-e^{-t}}\right]\times$ $\times W_{k,\,\mu}\left[\frac{a}{e^t-1}\right]$, $\lvert\arg a\rvert<\pi$
28.131	$\frac{p\Gamma\left(\frac{1}{2}-k-\mu+p\right)}{\Gamma(1+p)}\times$ $\times W_{k-\frac{p}{2},\,\mu-\frac{p}{2}}(a)$	$\frac{1}{\Gamma(2\mu+1)}(e^t-1)^{\mu-\frac{1}{2}}\times$ $\times\exp\left(-\frac{a}{2}e^t\right)\times$ $\times M_{-k,\,\mu}[a(e^t-1)]$, $\operatorname{Re}\mu>-\frac{1}{2}$
28.132	$pa^{\mu-\frac{1}{2}+\frac{p}{2}}W_{k-\frac{p}{2},\,\mu+\frac{p}{2}}(a)$	$\frac{(e^t-1)^{-\frac{1}{2}-\mu-k}}{\Gamma\left(\frac{1}{2}-\mu-k\right)}\times$ $\times\exp\left[-\left(\frac{1}{2}-\mu+k\right)t-\right.$ $\left.-a\left(e^t-\frac{1}{2}\right)\right]$, $\operatorname{Re}(\mu+k)<\frac{1}{2}$ $\operatorname{Re}a>0$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
28.133	$p\Gamma\left(\frac{1}{2}+\mu+p\right)M_{p,\mu}(a)\,W_{-p,\mu}(b)$	$\frac{1}{2}\Gamma(2\mu+1)\sqrt{ab}\,\mathrm{csch}\left(\frac{t}{2}\right)\times$ $\times\exp\left[\frac{1}{2}(a-b)\,\mathrm{cth}\left(\frac{t}{2}\right)\right]\times$ $\times J_{2\mu}\left[\sqrt{ab}\,\mathrm{csch}\left(\frac{t}{2}\right)\right]$ $\mathrm{Re}\,a>0,\quad \mathrm{Re}\,b>0$
28.134	$p\Gamma\left(\frac{1}{2}+\mu+p\right)\Gamma\left(\frac{1}{2}-\mu+p\right)\times$ $\times W_{-p,\mu}(a)\,W_{p,\mu}(b)$	$\frac{\sqrt{ab}}{2}\mathrm{csch}\left(\frac{t}{2}\right)\times$ $\times\exp\left[-\frac{1}{2}(a+b)\,\mathrm{cth}\left(\frac{t}{2}\right)\right]\times$ $\times K_{2\mu}\left[\sqrt{ab}\,\mathrm{csch}\left(\frac{t}{2}\right)\right]$ $\mathrm{Re}\,a>0,\quad \mathrm{Re}\,b>0$

§ 29. Цилиндрические функции

№	$\bar{f}(p)$	$f(t)$
29.1	$pO_n(p)$	$\frac{1}{2}\left[\left(t+\sqrt{t^2+1}\right)^n+\left(t-\sqrt{t^2+1}\right)^n\right]$
29.2	$pS_n(p)$	$\frac{1}{\sqrt{t^2+1}}\left[\left(t+\sqrt{t^2+1}\right)^n-\right.$ $\left.-\left(t-\sqrt{t^2+1}\right)^n\right]$
29.3	$J_\nu\left(\frac{1}{p}\right)$	$J_\nu(\sqrt{2t})\,I_\nu(\sqrt{2t}),\ \mathrm{Re}\,\nu>-1$
29.4	$(-1)^{\frac{n}{2}}J_n\left(\frac{2}{p}\right)$	$\mathrm{ber}_n^2(-2\sqrt{t})+\mathrm{bei}_n^2(-2\sqrt{t})$
29.5	$\exp\left(\frac{\alpha^2-\beta^2}{p}\right)J_\nu\left(\frac{2\alpha\beta}{p}\right)$	$I_\nu(2\alpha\sqrt{t})\,J_\nu(2\beta\sqrt{t}),\ \mathrm{Re}\,\nu>-1$
29.6	$\exp\left(-\frac{\alpha^2-\beta^2}{p}\right)J_\nu\left(\frac{2\alpha\beta}{p}\right)$	$J_\nu(2\alpha\sqrt{t})\,I_\nu(2\beta\sqrt{t}),\quad \mathrm{Re}\,\nu>-1$
29.7	$\frac{J_\nu\left(\frac{1}{\sqrt{p}}\right)}{p^{\mu-\frac{\nu}{2}}}$	$(2t)^{\frac{2\mu-\nu}{3}}J^{(2)}_{\mu,\nu}\left(3\sqrt[3]{\frac{t}{4}}\right)$ $\mathrm{Re}\,\mu>-1$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.8	$pe^{-p}I_0(p)$	0 при $t>2$ $\dfrac{1}{\pi\sqrt{t(2-t)}}$ при $t<2$
29.9	$\dfrac{I_1(ap)}{\operatorname{sh} ap}$	$\dfrac{2}{a\pi}\sqrt{2a(t-2ak)-(t-2ak)^2}$ при $2ak<t<2a(k+1)$ $k=0,\ 1,\ 2,\ \ldots$
29.10	$\dfrac{1}{p^{\nu-1}}e^{-\alpha p}I_\nu(\alpha p)$	0 при $t>2\alpha$ $\dfrac{(2\alpha t-t^2)^{\nu-\frac{1}{2}}}{(2\alpha)^\nu\sqrt{\pi}\,\Gamma\left(\nu+\frac{1}{2}\right)}$ при $t<2\alpha$ $\alpha>0,\ \operatorname{Re}\nu>-\frac{1}{2}$
29.11	$\dfrac{I_\nu(ap)}{p^{\nu-1}\operatorname{sh} ap}$	$\dfrac{1}{\pi}\left(\dfrac{2}{a}\right)^\nu\dfrac{\Gamma(\nu)}{\Gamma(2\nu)}\times$ $\times[2a(t-2ak)-(t-2ak)^2]^{\nu-\frac{1}{2}}$ при $2ak<t<2a(k+1)$ $k=0,\ 1,\ 2,\ \ldots;\ a>0$ $\operatorname{Re}\nu>-\frac{1}{2}$
29.12	$p\,[I_{-\nu}(p)-I_\nu(p)]$	0 при $t<1$ $\dfrac{2\sin\nu\pi\operatorname{ch}(\nu\operatorname{Arch}t)}{\pi\sqrt{t^2-1}}$ при $t>1$
29.13	$pe^{-\alpha p}I_0[\alpha(p+\beta)]$	0 при $t>2\alpha$ $\dfrac{e^{-\beta(t-\alpha)}}{\pi\sqrt{t(2\alpha-t)}}$ при $t<2\alpha$
29.14	$pe^{-\alpha p}I_1[\alpha(p+\beta)]$	0 при $t>2\alpha$ $\dfrac{(\alpha-t)e^{-\beta(t-\alpha)}}{\pi\alpha\sqrt{t(2\alpha-t)}}$ при $t<2\alpha$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.15	$\pi p e^{-ap}\left[\frac{\pi}{2}Y_0(iap)-\right.$ $\left.-J_0(iap)\ln\left(\frac{C}{2}\right)\right]$	$\frac{\ln\left[4t(2a-t)\frac{1}{a^2}\right]}{\sqrt{t(2a-t)}}$ при $t<2a$; 0 при $t>2a,\ a>0$
29.16	$\exp\left(-\frac{\alpha^2+\beta^2}{2p}\right)I_{\frac{1}{2}}\left(\frac{2\alpha\beta}{p}\right)$	$\frac{\sqrt{2}}{\pi}\frac{\sin\alpha\sqrt{2t}\sin\beta\sqrt{2t}}{\sqrt{\alpha\beta t}}$
29.17	$\exp\left(-\frac{\alpha^2+\beta^2}{2p}\right)I_{-\frac{1}{2}}\left(\frac{2\alpha\beta}{p}\right)$	$\frac{\sqrt{2}}{\pi}\frac{\cos\alpha\sqrt{2t}\cos\beta\sqrt{2t}}{\sqrt{\alpha\beta t}}$
29.18	$\sqrt{p}\,e^{\frac{1}{p}}I_{\frac{1}{4}}\left(\frac{1}{p}\right)$	$\frac{\operatorname{sh}2\sqrt{2t}}{\pi\sqrt[4]{2t^3}}$
29.19	$\sqrt{p}\,e^{-\frac{1}{p}}I_{\frac{1}{4}}\left(\frac{1}{p}\right)$	$\frac{\sin 2\sqrt{2t}}{\pi\sqrt[4]{2t^3}}$
29.20	$\sqrt{p}\exp\left(-\frac{1}{ap}\right)I_{\frac{1}{4}}\left(\frac{1}{ap}\right)$	$\frac{1}{\pi}\sqrt[4]{\frac{a}{2t^3}}\sin\left(2\sqrt{\frac{2t}{a}}\right)$
29.21	$\sqrt{p}\operatorname{ch}\frac{1}{p}I_{\frac{1}{4}}\left(\frac{1}{p}\right)$	$\frac{\operatorname{sh}\sqrt{8t}+\sin\sqrt{8t}}{2\pi\sqrt[4]{2t^3}}$
29.22	$\sqrt{p}\,e^{\frac{1}{p}}I_{-\frac{1}{4}}\left(\frac{1}{p}\right)$	$\frac{\operatorname{ch}2\sqrt{2t}}{\pi\sqrt[4]{2t^3}}$
29.23	$\sqrt{p}\,e^{-\frac{1}{p}}I_{-\frac{1}{4}}\left(\frac{1}{p}\right)$	$\frac{\cos 2\sqrt{2t}}{\pi\sqrt[4]{2t^3}}$
29.24	$\sqrt{p}\exp\left(-\frac{1}{ap}\right)I_{-\frac{1}{4}}\left(\frac{1}{ap}\right)$	$\frac{1}{\pi}\sqrt[4]{\frac{a}{2t^3}}\cos\left(2\sqrt{\frac{2t}{a}}\right)$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.25	$\frac{p}{\sqrt{p+b}}\exp\left[\frac{1}{a(p+b)}\right]\times I_{\frac{1}{4}}\left[\frac{1}{a(p+b)}\right]$	$\frac{1}{\pi}\sqrt[4]{\frac{a}{2t^3}}e^{-bt}\operatorname{sh}\left(2\sqrt{\frac{2t}{a}}\right)$
29.26	$\frac{p}{\sqrt{p+b}}\exp\left[\frac{1}{a(p+b)}\right]\times I_{\frac{1}{4}}\left[\frac{1}{a(p+b)}\right]$	$\frac{1}{\pi}\sqrt[4]{\frac{a}{2t^3}}e^{-bt}\operatorname{ch}\left(2\sqrt{\frac{2t}{a}}\right)$
29.27	$\sqrt{p}\operatorname{sh}\frac{1}{p}I_{\frac{1}{4}}\left(\frac{1}{p}\right)$	$\frac{\operatorname{sh}\sqrt{8t}-\sin\sqrt{8t}}{2\pi\sqrt[4]{2t^3}}$
29.28	$\sqrt{p}\operatorname{ch}\frac{1}{p}I_{-\frac{1}{4}}\left(\frac{1}{p}\right)$	$\frac{\operatorname{ch}\sqrt{8t}+\cos\sqrt{8t}}{2\pi\sqrt[4]{2t^3}}$
29.29	$\sqrt{p}\operatorname{sh}\frac{1}{p}I_{-\frac{1}{4}}\left(\frac{1}{p}\right)$	$\frac{\operatorname{ch}\sqrt{8t}-\cos\sqrt{8t}}{2\pi\sqrt[4]{2t^3}}$
29.30	$\sqrt{p}\,e^{\frac{1}{p}}I_{\frac{3}{4}}\left(\frac{1}{p}\right)$	$\frac{\operatorname{ch}\sqrt{8t}}{\pi\sqrt[4]{2t^3}}-\frac{\operatorname{sh}\sqrt{8t}}{2\pi t\sqrt[4]{8t}}$
29.31	$\sqrt{p}\,e^{-\frac{1}{p}}I_{\frac{3}{4}}\left(\frac{1}{p}\right)$	$\frac{\sin\sqrt{8t}}{2\pi t\sqrt[4]{8t}}-\frac{\cos\sqrt{8t}}{\pi\sqrt[4]{2t^3}}$
29.32	$\sqrt{p}\,e^{\frac{1}{p}}I_{-\frac{3}{4}}\left(\frac{1}{p}\right)$	$\frac{\operatorname{sh}\sqrt{8t}}{\pi\sqrt[4]{2t^3}}-\frac{\operatorname{ch}\sqrt{8t}}{2\pi t\sqrt[4]{8t}}$
29.33	$\sqrt{p}\,e^{-\frac{1}{p}}I_{-\frac{3}{4}}\left(\frac{1}{p}\right)$	$-\frac{\sin\sqrt{8t}}{\pi\sqrt[4]{2t^3}}-\frac{\cos\sqrt{8t}}{2\pi t\sqrt[4]{8t}}$
29.34	$\sqrt{p}\,e^{\frac{1}{p}}I_{\frac{5}{4}}\left(\frac{1}{p}\right)$	$\left(\frac{3}{8t}+1\right)\frac{\operatorname{sh}\sqrt{8t}}{\pi\sqrt[4]{2t^3}}-\frac{3\operatorname{ch}\sqrt{8t}}{2\pi t\sqrt[4]{8t}}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.35	$\sqrt{p}\,e^{-\frac{1}{p}}I_{\frac{5}{4}}\left(\frac{1}{p}\right)$	$\left(\frac{3}{8t}-1\right)\frac{\sin\sqrt{8t}}{\pi\sqrt[4]{2t^3}}-\frac{3\cos\sqrt{8t}}{2\pi t\sqrt[4]{8t}}$
29.36	$\sqrt{p}\,e^{\frac{1}{p}}I_{-\frac{5}{4}}\left(\frac{1}{p}\right)$	$\left(\frac{3}{8t}+1\right)\frac{\operatorname{ch}\sqrt{8t}}{\pi\sqrt[4]{2t^3}}-\frac{3\operatorname{sh}\sqrt{8t}}{2\pi t\sqrt[4]{8t}}$
29.37	$\sqrt{p}\,e^{-\frac{1}{p}}I_{-\frac{5}{4}}\left(\frac{1}{p}\right)$	$\left(\frac{3}{8t}-1\right)\frac{\cos\sqrt{8t}}{\pi\sqrt[4]{2t^3}}+\frac{3\sin\sqrt{8t}}{2\pi t\sqrt[4]{8t}}$
29.38	$I_\nu\left(\frac{1}{p}\right)$	$J_\nu(\sqrt{-2it})\,J_\nu(\sqrt{2it})$, $\operatorname{Re}\nu>-1$
29.39	$I_\nu\left(\frac{2}{p}\right)$	$\operatorname{ber}_\nu^2(2\sqrt{t})+\operatorname{bei}_\nu^2(2\sqrt{t})$ $\operatorname{Re}\nu>-1$
29.40	$pI_\nu\left(\frac{1}{p}\right)$	$\sqrt{\frac{2}{t}}(\operatorname{ber}_\nu\sqrt{2t}\,\operatorname{ber}'_\nu\sqrt{2t}+$ $+\operatorname{bei}_\nu\sqrt{2t}\,\operatorname{bei}'_\nu\sqrt{2t})$, $\operatorname{Re}\nu>0$
29.41	$p^2I_\nu\left(\frac{2}{p}\right)$	$\operatorname{ber}_\nu'^2\,2\sqrt{t}+\operatorname{bei}_\nu'^2\,2\sqrt{t}$ $\operatorname{Re}\nu>0$
29.42	$p^{n+1}I_\nu\left(\frac{2}{p}\right)$	$\frac{d^{n+1}}{dt^{n+1}}(\operatorname{ber}_\nu^2\,2\sqrt{t}+\operatorname{bei}_\nu^2\,2\sqrt{t})$ $\operatorname{Re}\nu>n$
29.43	$\frac{1}{p}\,I_\nu\left(\frac{2}{p}\right)$	$\sqrt{t}(\operatorname{ber}_\nu 2\sqrt{t}\,\operatorname{bei}'_\nu 2\sqrt{t}-$ $-\operatorname{bei}_\nu 2\sqrt{t}\,\operatorname{ber}'_\nu 2\sqrt{t})$ $\operatorname{Re}\nu>-2$
29.44	$e^{\frac{1}{p}}I_\nu\left(\frac{1}{p}\right)$	$I_\nu^2(\sqrt{2t})$, $\operatorname{Re}\nu>-1$
29.45	$\exp\left(\frac{\alpha^2+\beta^2}{p}\right)I_\nu\left(\frac{2\alpha\beta}{p}\right)$	$I_\nu(2\alpha\sqrt{t})\,I_\nu(2\beta\sqrt{t})$ $\operatorname{Re}\nu>-1$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.46	$\sqrt{p}\,e^{\frac{1}{p}}\,I_\nu\left(\frac{1}{p}\right)$	$\dfrac{I_{2\nu}(\sqrt{8t})}{\sqrt{\pi t}}$, $\operatorname{Re}\nu>-\frac{1}{2}$
29.47	$\dfrac{1}{\sqrt{p}}\,e^{\frac{1}{p}}\,I_\nu\left(\frac{1}{p}\right)$	$\int\limits_0^t \dfrac{I_{2\nu}(\sqrt{8\tau})\,d\tau}{\sqrt{\pi\tau}}=$ $=\dfrac{1}{\sqrt{\pi}}\sum\limits_{k=0}^\infty I_{2\nu+2k+1}(\sqrt{8t})=$ $=\dfrac{1}{\sqrt{\pi}}\,Y_{2\nu+1}(\sqrt{8t},\ \sqrt{8t})$ $\operatorname{Re}\nu>-\frac{1}{2}$
29.48	$\dfrac{e^{\frac{1}{p}}}{\sqrt{p}}\left[I_{\frac{\nu-1}{2}}\left(\frac{1}{p}\right)-I_{\frac{\nu+1}{2}}\left(\frac{1}{p}\right)\right]$	$\sqrt{\dfrac{\pi}{2}}\,I_\nu(\sqrt{8t})$
29.49	$e^{-\frac{1}{p}}\,I_\nu\left(\frac{1}{p}\right)$	$J_\nu^2(\sqrt{2t})$, $\operatorname{Re}\nu>-1$
29.50	$\exp\left(-\dfrac{\alpha^2+\beta^2}{p}\right)I_\nu\left(\dfrac{2\alpha\beta}{p}\right)$	$J_\nu(2\alpha\sqrt{t})\,J_\nu(2\beta\sqrt{t})$ $\operatorname{Re}\nu>-1$
29.51	$\exp\left(-\dfrac{\alpha+\beta}{p}\right)I_\nu\left(\dfrac{\alpha-\beta}{p}\right)$	$J_\nu[\sqrt{2(\alpha+\beta)t}]\,J_\nu[\sqrt{2(\alpha-\beta)t}]$ $\operatorname{Re}\nu>-1$
29.52	$\sqrt{p}\,e^{-\frac{1}{p}}\,I_\nu\left(\frac{1}{p}\right)$	$\dfrac{J_{2\nu}(\sqrt{8t})}{\sqrt{\pi t}}$, $\operatorname{Re}\nu>-\frac{1}{2}$
29.53	$\sqrt{p}\exp\left(-\dfrac{\alpha^2}{8p}\right)I_\nu\left(\dfrac{\alpha^2}{8p}\right)$	$\dfrac{1}{\sqrt{\pi t}}\,J_{2\nu}(\alpha\sqrt{t})$, $\operatorname{Re}\nu>-\frac{1}{2}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.54	$\frac{1}{\sqrt{p}}e^{-\frac{1}{p}}I_\nu\left(\frac{1}{p}\right)$	$\int\limits_0^t \frac{J_{2\nu}(\sqrt{8\tau})\,d\tau}{\sqrt{\pi\tau}}=$ $=\frac{1}{\sqrt{\pi}}\sum\limits_{k=0}^\infty J_{2\nu+2k+1}(\sqrt{8t})=$ $=\frac{1}{\sqrt{\pi}}U_{2\nu+1}(\sqrt{8t},\ \sqrt{8t})$ $\operatorname{Re}\nu>-\frac{3}{2}$
29.55	$\frac{1}{\sqrt{p}}e^{-\frac{2}{p}}I_\nu\left(\frac{2}{p}\right)$	$\frac{1}{\sqrt{\pi}}\int\limits_0^t \frac{J_\nu(2\sqrt{\tau})\,d\tau}{\sqrt{t-\tau}},\quad \operatorname{Re}\nu>-\frac{1}{2}$
29.56	$\frac{e^{-\frac{1}{p}}}{\sqrt{p}}\left[I_{\frac{\nu-1}{2}}\left(\frac{1}{p}\right)-I_{\frac{\nu+1}{2}}\left(\frac{1}{p}\right)\right]$	$\sqrt{\frac{2}{\pi}}J_\nu(\sqrt{8t})$
29.57	$\operatorname{ch}\frac{1}{p}\,I_\nu\left(\frac{1}{p}\right)$	$\frac{1}{2}[I_\nu^2(\sqrt{2t})+J_\nu^2(\sqrt{2t})]$ $\operatorname{Re}\nu>-1$
29.58	$\operatorname{ch}\frac{\alpha^2+\beta^2}{p}\,I_\nu\left(\frac{2\alpha\beta}{p}\right)$	$\frac{1}{2}[I_\nu(2\alpha\sqrt{t})I_\nu(2\sqrt{\alpha\beta t})+$ $+J_\nu(2\alpha\sqrt{t})J_\nu(2\sqrt{\alpha\beta t})]$ $\operatorname{Re}\nu>-1$
29.59	$\sqrt{p}\operatorname{ch}\frac{1}{p}\,I_\nu\left(\frac{1}{p}\right)$	$\frac{1}{2\sqrt{\pi t}}[I_{2\nu}(\sqrt{8t})+J_{2\nu}(\sqrt{8t})]$ $\operatorname{Re}\nu>-\frac{1}{2}$
29.60	$\operatorname{sh}\frac{1}{p}\,I_\nu\left(\frac{1}{p}\right)$	$\frac{1}{2}[I_\nu^2(\sqrt{2t})-J_\nu^2(\sqrt{2t})]$ $\operatorname{Re}\nu>-1$
29.61	$\operatorname{sh}\frac{\alpha^2+\beta^2}{p}\,I_\nu\left(\frac{2\alpha\beta}{p}\right)$	$\frac{1}{2}[I_\nu(2\alpha\sqrt{t})I_\nu(2\sqrt{\alpha\beta t})-$ $-J_\nu(2\alpha\sqrt{t})J_\nu(2\sqrt{\alpha\beta t})]$ $\operatorname{Re}\nu>-1$

№	$\bar{f}(p) = p\int\limits_0^\infty e^{-pt} f(t)\,dt$	$f(t)$
29.62	$\sqrt{p}\,\operatorname{sh}\frac{1}{p}\, I_\nu\left(\frac{1}{p}\right)$	$\frac{1}{2\sqrt{\pi t}}\left[I_{2\nu}(\sqrt{8t}) - J_{2\nu}(\sqrt{8t})\right]$ $\operatorname{Re}\nu > -\frac{1}{2}$
29.63	$\frac{p}{p+b}\exp\left[\frac{1}{a(p+b)}\right] I_\nu\left[\frac{1}{a(p+b)}\right]$	$e^{-bt}\left[I_\nu\left(\sqrt{\frac{2t}{a}}\right)\right]^2, \quad \operatorname{Re}\nu > -1$
29.64	$\frac{p}{p+a}\exp\left(\frac{\alpha+\beta}{p+a}\right) I_\nu\left(\frac{\alpha-\beta}{p+a}\right)$	$e^{-at} I_\nu\left(\sqrt{2(\alpha+\beta)t}\right) \times$ $\times I_\nu\left(\sqrt{2(\alpha-\beta)t}\right), \quad \operatorname{Re}\nu > -1$
29.65	$\frac{p}{\sqrt{p+b}}\exp\left[\frac{1}{a(p+b)}\right] I_\nu\left[\frac{1}{a(p+b)}\right]$	$\frac{e^{-bt}}{\sqrt{\pi t}} I_{2\nu}\left(\sqrt{\frac{8t}{a}}\right), \quad \operatorname{Re}\nu > -\frac{1}{2}$
29.66	$e^{-\frac{1}{p^2}} I_\nu\left(\frac{1}{p^2}\right)$	$2\sqrt[6]{\frac{2}{t^2}}\, J^{(2)}_{2\nu,\nu}\left(3\sqrt[3]{\frac{t^2}{2}}\right)$ $\operatorname{Re}\nu > 0$
29.67	$\frac{1}{p} e^{-\frac{1}{p^2}} I_\nu\left(\frac{1}{p^2}\right)$	$\sqrt{2}\, J^{(2)}_{2\nu,\nu}\left(3\sqrt[3]{\frac{t^2}{2}}\right), \quad \operatorname{Re}\nu > 0$
29.68	$p\left(\sqrt{p+\beta}\right)\left\{I_{\nu-\frac{1}{4}}[\alpha(p+\beta)] \times\right.$ $\times I_{-\nu-\frac{1}{4}}[\alpha(p+\beta)] -$ $- I_{\nu+\frac{1}{4}}[\alpha(p+\beta)] \times$ $\left.\times I_{-\nu+\frac{1}{4}}[\alpha(p+\beta)]\right\}$	$\sqrt{\frac{8}{\pi^3 t}}\,\frac{e^{-\beta t}}{4\alpha^2 - t^2} \times$ $\times \cos\left[2\nu\arccos\left(\frac{t}{2\alpha}\right)\right]$ при $t < 2\alpha$ 0 при $t > 2\alpha$
29.69	$p\exp\left[-\frac{1}{2}(a+b)p\right] \times$ $\times I_n\left[\frac{1}{2}(b-a)p\right]$	0 при $0 < t < a$ $\frac{\cos\left(n\arccos\frac{2t-a-b}{b-a}\right)}{\pi\sqrt{(t-a)(b-t)}}$ при $a < t < b$ 0 при $t > b$, $b > a \geqslant 0$

№	$\bar{f}(p) = p\int_0^\infty e^{-pt} f(t)\,dt$	$f(t)$
29.70	$\dfrac{\pi^{3/2} e^{-\frac{bp}{2}} p^{\nu+1}}{\Gamma\left(\nu+\frac{1}{2}\right) b^{\nu}} I_{\nu}\left(\dfrac{bp}{2}\right)$	$\cos(2\pi\nu)(bt-t^2)^{-\nu-\frac{1}{2}}$ при $0<t<b$ $-\sin(2\pi\nu)(t^2-bt)^{-\nu-\frac{1}{2}}$ при $t>b$ $\operatorname{Re}\nu<\frac{1}{2},\ b>0$
29.71	$\Gamma(2\nu+n)\, e^{-\frac{bp}{2}} b^{\nu} p^{-\nu+1} I_{\nu+n}\left(\dfrac{bp}{2}\right)$	$\dfrac{(-1)^n n!\,\Gamma(\nu)\,2^{2\nu}}{\pi(bt-t^2)^{\frac{1}{2}-\nu}} C_n^{\nu}\left(\dfrac{2t}{b}-1\right)$ при $0<t<b$ 0 при $t>b$; $\operatorname{Re}\nu>-\frac{1}{2},\ b>0$
29.72	$p^{-\lambda+1} I_{\nu}\left(\dfrac{2a}{p}\right)$	$\dfrac{a^{\nu} t^{\lambda+\nu-1}}{\Gamma(\nu+1)\Gamma(\lambda+\nu)}\times$ $\times {}_0F_3\left(\nu+1,\ \dfrac{\lambda+\nu}{2},\ \dfrac{\lambda+\nu+1}{2};\ \dfrac{a^2t^2}{4}\right)$, $\operatorname{Re}(\lambda+\nu)>0$
29.73	$p^{-\lambda+1} e^{\frac{a}{p}} I_{\nu}\left(\dfrac{a}{p}\right)$	$\dfrac{2^{-\nu} a^{\nu} t^{\lambda+\nu-1}}{\Gamma(\nu+1)\Gamma(\lambda+\nu)}\times$ $\times {}_1F_2\left(\nu+\frac{1}{2};\ 2\nu+1,\ \lambda+\nu;\ 2at\right)$ $\operatorname{Re}(\lambda+\nu)>0$
29.74	$p^{-\lambda+1} e^{-\frac{a}{p}} I_{\nu}\left(\dfrac{a}{p}\right)$	$\dfrac{2^{-\nu} a^{\nu} t^{\lambda+\nu-1}}{\Gamma(\nu+1)\Gamma(\lambda+\nu)}\times$ $\times {}_1F_2\left(\nu+\frac{1}{2};\ 2\nu+1,\ \lambda+\nu;\ -2at\right)$, $\operatorname{Re}(\lambda+\nu)>0$
29.75	$\sqrt{2\pi}\, p\,(p^2+a^2)^{-\frac{\nu}{2}} e^{-p}\times$ $\times C_n^{\nu}\left(\dfrac{p}{\sqrt{p^2+a^2}}\right) I_{\nu+n}\left(\sqrt{p^2+a^2}\right)$	$(-1)^n a^{\frac{1}{2}-\nu} (2t-t^2)^{\frac{\nu}{2}-\frac{1}{4}}\times$ $\times C_n^{\nu}(t-1)\, I_{\nu-\frac{1}{2}}\left[a\sqrt{2t-t^2}\right]$ при $0<t<2$ 0 при $t>2$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.76	$\pi p e^{-p} I_0\left(\sqrt{p^2-a^2}\right)$	$(2t-t^2)^{-\frac{1}{2}}\cos\left[a\sqrt{2t-t^2}\right]$ при $0<t<2$; 0 при $t>2$
29.77	$I_0(\ln p)$	$\frac{1}{\pi}\int\limits_0^2 \frac{t^{u-1}\,du}{\Gamma(u)\sqrt{u(2-u)}}$
29.78	$K_0(\alpha p)$	0 при $0<t<\alpha$; $\operatorname{Arch}\frac{t}{\alpha}$ при $t>\alpha,\ \alpha>0$
29.79	$pK_0(p)$	0 при $0<t<1$; $\frac{1}{\sqrt{t^2-1}}$ при $t>1$
29.80	$e^{\alpha p}K_0(\alpha p)$	$\operatorname{Arch}\left(\frac{t}{\alpha}+1\right)$
29.81	$pe^{p}K_0(p)$	$\frac{1}{\sqrt{t(t+2)}}$
29.82	$pK_0[\alpha(p+\beta)]$	0 при $0<t<\alpha$; $\frac{e^{-\beta t}}{\sqrt{t^2-\alpha^2}}$ при $t>\alpha$
29.83	$\frac{pK_0[\alpha(p+a)]}{p+a}$	0 при $t<\alpha$; $e^{-at}\operatorname{Arch}\left(\frac{t}{\alpha}\right)=2e^{-at}\ln\left[\frac{\sqrt{t-\alpha}+\sqrt{t+\alpha}}{\sqrt{2\alpha}}\right]$ при $t>\alpha$
29.84	$pe^{\alpha^2 p}K_0[\alpha^2(p+\beta)]$	$\frac{\exp[-\beta(t+\alpha^2)]}{\sqrt{t(t+2\alpha^2)}}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.85	$\dfrac{pe^{\alpha^2 p}K_0[\alpha^2(p+a)]}{p+a}$	$\exp[-a(t+\alpha^2)]\,\mathrm{Arch}\left(\dfrac{t+\alpha^2}{\alpha^2}\right)=$ $=2\exp[-a(t+\alpha^2)]\times$ $\times\ln\left[\dfrac{\sqrt{t}-\sqrt{t+2\alpha^2}}{\sqrt{2\alpha}}\right]$
29.86	$K_1(bp)$	0 при $0<t<b$ $\dfrac{\sqrt{t^2-b^2}}{b}$ при $t>b$ $b>0$
29.87	$pK_1[\alpha(p+\beta)]$	0 при $0\leqslant t<\alpha$ $\dfrac{te^{-\beta t}}{\alpha\sqrt{t^2-\alpha^2}}$ при $t>\alpha$
29.88	$\dfrac{pK_1[\alpha(p+a)]}{p+a}$	0 при $0<t<\alpha$ $\dfrac{e^{-at}}{\alpha}\sqrt{t^2-\alpha^2}$ при $t>\alpha$
29.89	$\dfrac{pK_1[\sqrt{\alpha(p+a)}]}{\sqrt{p+a}}$	$\dfrac{\exp\left(-at-\dfrac{\alpha}{4t}\right)}{\sqrt{\alpha}}$
29.90	$p\sqrt{p+\beta}\,K_1[\sqrt{\alpha(p+\beta)}]$	$\dfrac{\sqrt{\alpha}}{4t^2}\exp\left(-\beta t-\dfrac{\alpha}{4t}\right)$
29.91	$pe^{\alpha^2 p}K_1[\alpha^2(p+\beta)]$	$\dfrac{(t+\alpha^2)\exp[-\beta(t+\alpha^2)]}{\alpha^2\sqrt{t(t+2\alpha^2)}}$ $\mathrm{Im}\,\alpha=0$
29.92	$\dfrac{pe^{\alpha^2 p}K_1[\alpha^2(p+a)]}{p+a}$	$\dfrac{\sqrt{t(t+2\alpha^2)}}{\alpha^2}\exp[-a(t+\alpha^2)]$ $\mathrm{Im}\,\alpha=0$
29.93	$p\sqrt[4]{p+\beta}\,K_{\frac{1}{4}}[\alpha(p+\beta)]$	0 при $0<t<\alpha$ $\dfrac{\sqrt[4]{2\alpha\pi^2}\,e^{-\beta t}}{\Gamma\left(\dfrac{1}{4}\right)\sqrt[4]{(t^2-\alpha^2)^3}}$ при $t>\alpha$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt} f(t)\,dt$	$f(t)$
29.94	$\dfrac{pK_{\frac{1}{4}}[\alpha(p+a)]}{\sqrt{p+a}}$	0 при $0<t<\alpha$ $\dfrac{\sqrt{\pi}\,e^{-at}}{\Gamma\left(\frac{3}{4}\right)\sqrt[4]{2\alpha(t^2-\alpha^2)}}$ при $t>\alpha$
29.95	$p\sqrt[4]{p+\beta}\,e^{\alpha^2 p} K_{\frac{1}{4}}[\alpha^2(p+\beta)]$	$\dfrac{\sqrt{\sqrt{2}\pi\alpha}\exp[-\beta(t+\alpha^2)]}{\Gamma\left(\frac{1}{4}\right)\sqrt[4]{[t(t+2\alpha^2)]^3}}$ $\operatorname{Im}\alpha=0$
29.96	$\dfrac{pe^{\alpha^2 p} K_{\frac{1}{4}}[\alpha^2(p+a)]}{\sqrt[4]{p+a}}$	$\dfrac{\sqrt{\pi}\exp[-a(t+\alpha^2)]}{\Gamma\left(\frac{3}{4}\right)\sqrt{\alpha}\sqrt[4]{2t(t+2\alpha^2)}}$ $\operatorname{Im}\alpha=0$
29.97	$K_\nu(ap)$	$\dfrac{1}{\nu}\operatorname{sh}\left(\nu\operatorname{Arch}\dfrac{t}{a}\right)$ при $t>a$ 0 при $0<t<a$ $a>0$
29.98	$pK_\nu(ap)$	$\dfrac{1}{\sqrt{t^2-a^2}}\operatorname{ch}\left[\nu\operatorname{Arch}\dfrac{t}{a}\right]$ при $t>a$ 0 при $0<t<a$ $a>0$
29.99	$\dfrac{K_{\nu+\frac{1}{2}}(p)}{p^{\mu-\frac{1}{2}}}$	0 при $0<t<1$ $\sqrt{\dfrac{\pi}{2}}(t^2-1)^{\frac{\mu}{2}} P_\nu^{-\mu}(t)$ при $t>1$
29.100	$\Gamma\left(\nu+\dfrac{1}{2}\right)p^{1-\nu}K_\nu(ap)$	0 при $0<t<a$ $2^{-\nu}\sqrt{\pi}\,a^{-\nu}(t^2-a^2)^{\nu-\frac{1}{2}}$ при $t>a$ $a>0,\ \operatorname{Re}\nu>-\dfrac{1}{2}$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.101	$2^{2\mu}\Gamma\left(2\mu+\frac{1}{2}\right)\left(\frac{p}{a}\right)^{-2\mu}pK_{2\nu}(ap)$	0 при $0<t<a$ $\sqrt{\pi}(t^2-a^2)^{2\mu-\frac{1}{2}}\times$ $\times{}_2F_1\left(\mu-\nu,\quad\mu+\nu;\quad 2\mu+\frac{1}{2};\right.$ $\left.1-\frac{t^2}{a^2}\right)$ при $t>a$, $\operatorname{Re}\mu>-\frac{1}{4},\quad a>0$
29.102	$pe^{\alpha p}K_0(\alpha p)$	$\frac{1}{\sqrt{t^2+2\alpha t}},\quad \lvert\arg\alpha\rvert<\pi$
29.103	$pe^{\alpha p}K_1(\alpha p)$	$\frac{1}{\alpha}(t+\alpha)(t^2+2\alpha t)^{-\frac{1}{2}},\ \lvert\arg\alpha\rvert<\pi$
29.104	$\frac{e^{\alpha p}K_\nu(\alpha p)}{p^{\nu-1}}$	$\frac{\sqrt{\pi}(t^2+2\alpha t)^{\nu-\frac{1}{2}}}{(2\alpha)^\nu\Gamma\left(\nu+\frac{1}{2}\right)}$ $\operatorname{Re}\nu>-\frac{1}{2},\quad\lvert\arg\alpha\rvert<\pi$
29.105	$pK_\nu[\alpha(p+\beta)]$	0 при $0<t<\alpha$ $\frac{e^{-\beta t}}{\sqrt{t^2-\alpha^2}}\operatorname{ch}\left[\nu\operatorname{Arch}\left(\frac{t}{\alpha}\right)\right]$ при $t>\alpha$
29.106	$\frac{pK_\nu[\alpha(p+a)]}{p+a}$	0 при $0<t<\alpha$ $\frac{e^{-at}}{\nu}\operatorname{sh}\left[\nu\operatorname{Arch}\left(\frac{t}{\alpha}\right)\right]$ при $t>\alpha$
29.107	$\frac{pK_\nu[\alpha(p+a)]}{(p+a)^\nu}$	0 при $0<t<\alpha$ $\frac{\sqrt{\pi}\,e^{-at}(t^2-\alpha^2)^{\nu-\frac{1}{2}}}{(2\alpha)^\nu\Gamma\left(\nu+\frac{1}{2}\right)}$ при $t>\alpha$ $\operatorname{Re}\nu>-\frac{1}{2}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.108	$pe^{\alpha^2 p}K_\nu[\alpha^2(p+\beta)]$	$\frac{\exp[-\beta(t+\alpha^2)]}{\sqrt{t(t+2\alpha^2)}}\times$ $\times\operatorname{ch}\left[\nu\operatorname{Arch}\left(\frac{t+\alpha^2}{\alpha^2}\right)\right]$ $\operatorname{Re}\nu>0,\quad \operatorname{Im}\alpha=0$
29.109	$\frac{pe^{\alpha^2 p}K_\nu[\alpha^2(p+a)]}{p+a}$	$\frac{\exp[-a(t+\alpha^2)]}{\nu}\times$ $\times\operatorname{sh}\left[\nu\operatorname{Arch}\left(\frac{t+\alpha^2}{\alpha^2}\right)\right]$
29.110	$\frac{pe^{\alpha^2 p}K_\nu[\alpha^2(p+a)]}{(p+a)^\nu}$	$\frac{\sqrt{\pi}\exp[-a(t+\alpha^2)]}{2^\nu\alpha^{2\nu}\Gamma\left(\nu+\frac{1}{2}\right)}\times$ $\times t^{\nu-\frac{1}{2}}(t+2\alpha^2)^{\nu-\frac{1}{2}}$ $\operatorname{Re}\nu>0,\quad \operatorname{Im}\alpha=0$
29.111	$p^{\mu+1}e^{\alpha p}K_\nu(\alpha p)$	$\sqrt{\frac{\pi}{2\alpha}}(t^2+2\alpha t)^{-\frac{\mu}{2}-\frac{1}{4}}\times$ $\times P_{\nu-\frac{1}{2}}^{\mu+\frac{1}{2}}\left(1+\frac{t}{\alpha}\right),\quad \operatorname{Re}\mu<\frac{1}{2}$ $\lvert\arg\alpha\rvert<\pi$
29.112	$\sqrt{p}\,e^{\frac{1}{p}}K_0\left(\frac{1}{p}\right)$	$\frac{K_0(2\sqrt{2t})}{\sqrt{\pi t}}$
29.113	$\sqrt{p}\exp\left(\frac{\alpha}{p}\right)K_0\left(\frac{\alpha}{p}\right)$	$\frac{2}{\sqrt{\pi t}}K_0(2\sqrt{2\alpha t}),\quad \alpha>0$
29.114	$\sqrt{p}\,e^{-\frac{\alpha}{p}}K_0\left(\frac{\alpha}{p}\right)$	$-\sqrt{\frac{\pi}{t}}Y_0(2\sqrt{2\alpha t}),\quad \alpha>0$
29.115	$\sqrt{p}\operatorname{sh}\frac{1}{p}K_0\left(\frac{1}{p}\right)$	$\frac{1}{\sqrt{\pi t}}\left[K_0(\sqrt{8t})+\frac{\pi}{2}Y_0(\sqrt{8t})\right]$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt} f(t)\,dt$	$f(t)$
29.116	$\sqrt{p}\,\operatorname{sh}\frac{\alpha^2}{8p} K_0\left(\frac{\alpha^2}{8p}\right)$	$\dfrac{K_0(\alpha\sqrt{t})+\frac{\pi}{2}Y_0(\alpha\sqrt{t})}{\sqrt{\pi t}}$
29.117	$\sqrt{p}\,\operatorname{ch}\frac{1}{p} K_0\left(\frac{1}{p}\right)$	$\frac{1}{\sqrt{\pi t}}\left[K_0(\sqrt{8t})-\frac{\pi}{2}Y_0(\sqrt{8t})\right]$
29.118	$\sqrt{p}\,\operatorname{ch}\frac{\alpha^2}{8p} K_0\left(\frac{\alpha^2}{8p}\right)$	$\dfrac{K_0(\alpha\sqrt{t})-\frac{\pi}{2}Y_0(\alpha\sqrt{t})}{\sqrt{\pi t}}$
29.119	$\frac{p}{\sqrt{p+b}}\exp\left[\frac{1}{a(p+b)}\right]\times$ $\times K_0\left[\frac{1}{a(p+b)}\right]$	$\frac{2e^{-bt}}{\sqrt{\pi t}}K_0\left(\sqrt{\frac{8t}{a}}\right)$
29.120	$\sqrt{p}\exp\left(\frac{1}{\alpha^2 p}\right)K_{\frac{1}{4}}\left(\frac{1}{\alpha^2 p}\right)$	$\frac{\sqrt{\alpha}}{\sqrt[4]{8t^3}}\exp\left(-\sqrt{\frac{8t}{\alpha^2}}\right)$
29.121	$\frac{p}{\sqrt{p+b}}\exp\left[\frac{1}{a(p+b)}\right]\times$ $\times K_{\frac{1}{4}}\left[\frac{1}{a(p+b)}\right]$	$\sqrt[4]{\frac{a}{8t^3}}\exp\left(-bt-\sqrt{\frac{8t}{a}}\right)$
29.122	$\sqrt{p}\exp\left(\frac{\alpha^2}{8p}\right)K_\nu\left(\frac{\alpha^2}{8p}\right)$	$\frac{2}{\sqrt{\pi t}}\cos\frac{\pi\nu}{2}K_\nu(\alpha\sqrt{t})$ $-\frac{1}{2}<\operatorname{Re}\nu<\frac{1}{2}$
29.123	$\sqrt{p}\exp\left(-\frac{\alpha^2}{8p}\right)K_\nu\left(\frac{\alpha^2}{8p}\right)$	$-\sqrt{\frac{\pi}{t}}\,[\cos(\pi\nu)\,Y_{2\nu}(\alpha\sqrt{t})+$ $+\sin(\pi\nu)\,J_{2\nu}(\alpha\sqrt{t})]$ $-\frac{1}{2}<\operatorname{Re}\nu<\frac{1}{2}$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.124	$\frac{p}{\sqrt{p+b}}\exp\left[\frac{1}{a(p+b)}\right]\times$ $\times K_\nu\left[\frac{1}{a(p+b)}\right]$	$\frac{2\sin\pi\left(\nu+\frac{1}{2}\right)}{\sqrt{\pi t}}e^{-bt}K_{2\nu}\left(\sqrt{\frac{8t}{a}}\right)$ $-\frac{1}{2}<\operatorname{Re}\nu<\frac{1}{2}$
29.125	$pK_0(\sqrt{\alpha(p+\beta)})$	$\frac{\exp\left(-\beta t-\frac{\alpha}{4t}\right)}{2t}$
29.126	$\sqrt{p}\,K_{2\nu}(\alpha\sqrt{p})$	$\frac{1}{2\sqrt{\pi t}}\exp\left(-\frac{\alpha^2}{8t}\right)K_\nu\left(\frac{\alpha^2}{8t}\right)$
29.127	$\sqrt{p}\,K_{2\nu}(\sqrt{8p})$	$\frac{1}{2\sqrt{\pi t}}\exp\left(-\frac{1}{t}\right)K_\nu\left(\frac{1}{t}\right)$
29.128	$p^{\frac{\nu}{2}+1}K_\nu(\alpha\sqrt{p})$	$\frac{\alpha^\nu\exp\left(-\frac{\alpha^2}{4t}\right)}{(2t)^{\nu+1}}$
29.129	$\frac{1}{p^{\frac{2\mu-1}{2}}}K_{2\nu}(\alpha\sqrt{p})$	$\frac{\alpha^{4\mu-1}}{t^\mu}\exp\left(-\frac{\alpha^2}{8t}\right)W_{\mu,\nu}\left(\frac{\alpha^2}{4t}\right)$
29.130	$p(p+\beta)^{\frac{\nu}{2}}K_\nu[\sqrt{\alpha(p+\beta)}]$	$\frac{\alpha^{\frac{\nu}{2}}}{(2t)^{\nu+1}}\exp\left(-\beta t-\frac{\alpha}{4t}\right)$ $\operatorname{Re}\nu>-1$ или $\operatorname{Re}\alpha\neq 0$
29.131	$\frac{pK_1(\alpha\sqrt{p^2+a^2})}{\sqrt{p^2+a^2}}$	0 при $t<\alpha$ $\frac{1}{a\alpha}\sin(a\sqrt{t^2-\alpha^2})$ при $t>\alpha$
29.132	$\frac{pK_{\frac{1}{2}}(\alpha\sqrt{p^2+a^2})}{\sqrt[4]{p^2+a^2}}$	0 при $t<\alpha$ $\sqrt{\frac{\pi}{2\alpha}}J_0(a\sqrt{t^2-\alpha^2})$ при $t>\alpha$ $\alpha\geqslant 0$

№	$\bar f(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.133	$\dfrac{pK_{\nu+\frac{1}{2}}(\alpha\sqrt{p^2+a^2})}{(\sqrt{p^2+a^2})^{\nu+\frac{1}{2}}}$	0 при $t<\alpha$ $\sqrt{\dfrac{\pi}{2\alpha}}\left(\dfrac{\sqrt{t^2-\alpha^2}}{\alpha a}\right)^{\nu}J_\nu(a\sqrt{t^2-\alpha^2})$ при $t>\alpha,\ \alpha>0$
29.134	$\dfrac{pe^{\alpha p}K_{\frac{1}{2}}(\alpha\sqrt{p^2+a^2})}{\sqrt[4]{p^2+a^2}}$	$\sqrt{\dfrac{\pi}{2\alpha}}J_0(a\sqrt{t(t+2\alpha)})$
29.135	$pe^{ap^2}K_0(ap^2)$	$\sqrt{\dfrac{\pi}{2a}}\exp\left(-\dfrac{t^2}{16a}\right)I_0\left(\dfrac{t^2}{16a}\right)$ $\operatorname{Re}a>0$
29.136	$p\sqrt{p}\,e^{ap^2}K_{\frac{1}{4}}(ap^2)$	$\dfrac{1}{\sqrt{2at}}\exp\left(-\dfrac{t^2}{8a}\right),\quad \operatorname{Re}a>0$
29.137	$\sqrt{p}\,e^{ap^2}K_{\frac{1}{4}}(ap^2)$	$(8a)^{-\frac{1}{4}}\gamma\left(\dfrac{1}{4},\ \dfrac{t^2}{8a}\right),\qquad \operatorname{Re}a>0$
29.138	$\Gamma(4\nu+1)p^{1-4\nu}e^{ap^2}K_{2\nu}(ap^2)$	$2^{3\nu+1}\sqrt{\pi}\,a^{\nu}t^{2\nu-1}\exp\left(-\dfrac{t^2}{16a}\right)\times$ $\times M_{-3\nu,\,\nu}\left(\dfrac{t^2}{8a}\right),\quad \operatorname{Re}\nu>-\dfrac{1}{4},$ $\operatorname{Re}a>0$
29.139	$p\exp[\alpha(p+\beta)^2]K_0[\alpha(p+\beta)^2]$	$\sqrt{\dfrac{\pi}{2\alpha}}\exp\left(-\beta t-\dfrac{t^2}{16\alpha}\right)I_0\left(\dfrac{t^2}{16\alpha}\right)$
29.140	$p\sqrt{p+\beta}\exp[\alpha(p+\beta)^2]\times$ $\times K_{\frac{1}{4}}[\alpha(p+\beta)^2]$	$\dfrac{1}{\sqrt{2\alpha t}}\exp\left(-\beta t-\dfrac{t^2}{8\alpha}\right),\quad \operatorname{Re}\beta>0$
29.141	$\dfrac{p}{\sqrt{p+a}}\exp[\alpha(p+a)^2]\times$ $\times K_{\frac{1}{4}}[\alpha(p+a)^2]$	$\dfrac{e^{-at}}{\sqrt[4]{8\alpha}}\gamma\left(\dfrac{1}{4},\ \dfrac{t^2}{8\alpha}\right)$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.142	$\frac{p\exp[\alpha(p+a)^2]}{(p+a)^{2\nu}}\times K_\nu[\alpha(p+a)^2]$	$\frac{2^{\frac{3}{2}\nu+1}\sqrt{\pi}\,\alpha^{\frac{\nu}{2}}}{\Gamma(2\nu+1)}t^{\nu-1}\times\exp\left(-at-\frac{t^2}{16\alpha}\right)\times M_{-\frac{3}{2}\nu,\,\frac{\nu}{2}}\left(\frac{t^2}{8\alpha}\right)$, $\operatorname{Re}\nu>\frac{1}{2}$
29.143	$\frac{pe^{\alpha^2p}K_\nu\left[\alpha^2\sqrt{(p+a)(p+b)}\right]}{[(p+a)(p+b)]^{\frac{\nu}{2}}}$	$\frac{\sqrt{\pi}\,2^{\nu-1}}{\alpha^{2\nu}(a-b)^{\nu-\frac{1}{2}}}[t(t+2\alpha^2)]^{\frac{\nu}{2}-\frac{1}{4}}\times\exp\left[-\frac{(a+b)(t+\alpha^2)}{2}\right]\times I_{\nu-\frac{1}{2}}\left[\frac{(a-b)\sqrt{t(t+2\alpha^2)}}{2}\right]$
29.144	$\frac{pK_\nu\left[\alpha\sqrt{(p+a)(p+b)}\right]}{[(p+a)(p+b)]^{\frac{\nu}{2}}}$	$\frac{2^{\nu-1}\sqrt{\pi}}{\alpha^\nu(a-b)^{\nu-\frac{1}{2}}}\exp\left[-\frac{1}{2}(a+b)t\right]\times(t^2-\alpha^2)^{\frac{\nu}{2}}\times I_{\nu-\frac{1}{2}}\left[\frac{1}{2}(a-b)\sqrt{t^2-\alpha^2}\right]$ при $t>\alpha$; 0 при $t<\alpha$
29.145	$p\sqrt{p+\beta}\,K_{\nu+\frac{1}{4}}[\alpha(p+\beta)]\times K_{\nu-\frac{1}{4}}[\alpha(p+\beta)]$	$\frac{\sqrt{2\pi}\,e^{-\beta t}}{\sqrt{t(t^2-4\alpha^2)}}\operatorname{ch}\left[2\nu\operatorname{Arch}\left(\frac{t}{2\alpha}\right)\right]$ при $t>2\alpha$; 0 при $t<2\alpha$
29.146	$p\sqrt{p+\beta}\exp(2\alpha^2p)\times K_{\nu+\frac{1}{4}}[\alpha^2(p+\beta)]\times K_{\nu-\frac{1}{4}}[\alpha^2(p+\beta)]$	$\sqrt{2\pi}\,\frac{\exp[-\beta(t+2\alpha^2)]}{\sqrt{t(t+2\alpha^2)(t+4\alpha^2)}}\times\operatorname{ch}\left[2\nu\operatorname{Arch}\frac{t+2\alpha^2}{2\alpha^2}\right]$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.147	$\frac{1}{\sqrt{p}}\exp\left(\frac{\alpha^2}{8p}\right)\times$ $\times\left[K_1\left(\frac{\alpha^2}{8p}\right)-K_0\left(\frac{\alpha^2}{8p}\right)\right]$	$\frac{8}{\alpha\sqrt{\pi}}K_1(\alpha\sqrt{t})$
29.148	$pK_\nu(\sqrt{p}+\sqrt{p-1})\times$ $\times K_\nu(\sqrt{p}-\sqrt{p-1})$	$\frac{1}{2t}e^{\frac{t}{2}-\frac{1}{t}}K_\nu\left(\frac{t}{2}\right)$
29.149	$p^{2\lambda+1}K_{2\nu}\left(\frac{2a}{p}\right)$	$2^{2\lambda}\sqrt{\pi}\,t^{-2\lambda-1}\times$ $\times S_2\left(\nu-\frac{1}{2},\ -\nu-\frac{1}{2},\ \lambda+\frac{1}{2},\ \lambda;\ \frac{at}{2}\right)$, $\operatorname{Re}(\lambda\pm\nu)<0$
29.150	$p^{-\frac{\nu}{2}+1}K_\nu(2\sqrt{ap})$	$\frac{t^{\nu-1}\exp\left(-\frac{a}{t}\right)}{2a^{\frac{\nu}{2}}}$, $\operatorname{Re}a>0$
29.151	$p^{\frac{\nu}{2}}K_\nu(2\sqrt{ap})$	$\frac{\Gamma\left(\nu,\ \frac{a}{t}\right)}{2a^{\frac{\nu}{2}}}$, $\operatorname{Re}a>0$
29.152	$p^{\frac{\nu}{2}+n+1}K_\nu(2\sqrt{ap})$	$\frac{1}{2}(-1)^n n!\,a^{\frac{\nu}{2}}t^{-n}\exp\left(-\frac{a}{t}\right)\times$ $\times L_n^\nu\left(\frac{a}{t}\right)$, $\operatorname{Re}a>0$
29.153	$\frac{p\exp(\beta p)K_\nu(\beta\sqrt{p^2+\alpha^2})}{(\sqrt{p^2+\alpha^2})^\nu}$	$\sqrt{\frac{\pi}{2}}\alpha^{\frac{1}{2}-\nu}\beta^{-\nu}(t^2+2\beta t)^{\frac{\nu}{2}-\frac{1}{4}}\times$ $\times J_{\nu-\frac{1}{2}}\left[\alpha(t^2+2\beta t)^{\frac{1}{2}}\right]$ $\operatorname{Re}\nu>-\frac{1}{2}$, $\lvert\arg\beta\rvert<\pi$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.154	$\sqrt{\dfrac{2}{\pi}}\,\dfrac{pK_\nu\left(b\sqrt{p^2-a^2}\right)}{\left(\sqrt{p^2-a^2}\right)^\nu}$	0 при $0<t<b$ $a^{\frac{1}{2}-\nu}b^{-\nu}\left(\sqrt{t^2-b^2}\right)^{\nu-\frac{1}{2}}\times$ $\times I_{\nu-\frac{1}{2}}\left(a\sqrt{t^2-b^2}\right)$ при $t>b$ $\operatorname{Re}\nu>-\frac{1}{2}$
29.155	$\dfrac{p\exp(\beta p)\,K_\nu\left(\beta\sqrt{p^2-\alpha^2}\right)}{\left(\sqrt{p^2-\alpha^2}\right)^\nu}$	$\sqrt{\dfrac{\pi}{2}}\,\alpha^{\frac{1}{2}-\nu}\beta^{-\nu}(t^2+2\beta t)^{\frac{\nu}{2}-\frac{1}{4}}\times$ $\times I_{\nu-\frac{1}{2}}\left[\alpha\sqrt{t^2+2\beta t}\right]$ $\operatorname{Re}\nu>-\frac{1}{2}$, $\lvert\arg\beta\rvert<\pi$
29.156	$\dfrac{p\left(\frac{c}{2}\right)^p K_p(c)}{\Gamma\left(p+\frac{1}{2}\right)}$	$\dfrac{\cos\left[c\sqrt{e^t-1}\right]}{2\sqrt{\pi(1-e^{-t})}}$, $c>0$
29.157	$\dfrac{pa^p K_{\nu-p}(a)}{\Gamma(p+1)}$	$\dfrac{1}{2}(e^t-1)^{\frac{\nu}{2}}J_\nu\left(2a\sqrt{e^t-1}\right)$ $\operatorname{Re}\nu>-1$, $a>0$
29.158	$\sqrt{p}\exp\left(-\dfrac{\alpha^2}{8p}\right)\left[I_0\left(\dfrac{\alpha^2}{8p}\right)+\right.$ $\left.+\dfrac{i}{\pi}K_0\left(\dfrac{\alpha^2}{8p}\right)\right]$	$\dfrac{H_0^{(2)}\left(\alpha\sqrt{t}\right)}{\sqrt{\pi t}}$
29.159	$\sqrt{p}\exp\left(-\dfrac{\alpha^2}{8p}\right)\left[I_0\left(\dfrac{\alpha^2}{8p}\right)-\right.$ $\left.-\dfrac{i}{\pi}K_0\left(\dfrac{\alpha^2}{8p}\right)\right]$	$\dfrac{H_0^{(1)}\left(\alpha\sqrt{t}\right)}{\sqrt{\pi t}}$
29.160	$pJ_\nu\left(\sqrt{ap}\right)K_\nu\left(\sqrt{ap}\right)$	$\dfrac{1}{2t}J_\nu\left(\dfrac{a}{2t}\right)$, $a>0$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt} f(t)\,dt$	$f(t)$
29.161	$pY_\nu(\sqrt{ap})\,K_\nu(\sqrt{ap})$	$\frac{1}{2t}Y_\nu\left(\frac{a}{2t}\right),\quad a>0$
29.162	$pH_\nu^{(1)}(\sqrt{ap})\,K_\nu(\sqrt{ap})$	$\frac{t}{2}H_\nu^{(1)}\left(\frac{a}{2t}\right),\quad a>0$
29.163	$pH_\nu^{(2)}(\sqrt{ap})\,K_\nu(\sqrt{ap})$	$\frac{1}{2t}H_\nu^{(2)}\left(\frac{a}{2t}\right),\quad a>0$
29.164	$p\sqrt{p}\,I_n(bp)\,K_{n+\frac{1}{2}}(bp)$	$\dfrac{(-1)^n\cos\left[\left(2n+\frac{1}{2}\right)\arccos\left(\frac{t}{2b}\right)\right]}{\sqrt{\frac{1}{2}\pi(4b^2t-t^3)}}$ при $0<t<2b$ 0 при $t>2b$, $b>0$
29.165	$pK_\nu(\sqrt{ap}+\sqrt{bp})\times$ $\times I_\nu(\sqrt{ap}-\sqrt{bp})$	$\frac{1}{2t}\exp\left[-\frac{a+b}{2t}\right]I_\nu\left[\frac{a-b}{2t}\right]$ $\operatorname{Re} a>0,\quad \operatorname{Re} b>0$
29.166	$pI_0(\alpha\sqrt{p})\,K_0(\alpha\sqrt{p})$	$\dfrac{\exp\left(-\frac{\alpha^2}{2t}\right)}{2t}I_0\left(\frac{\alpha^2}{2t}\right)$
29.167	$\sqrt{p}\exp\left(-\frac{\alpha^2}{8p}\right)\left[\sin\nu\pi\,I_\nu\left(\frac{\alpha^2}{8p}\right)+\right.$ $\left.+\frac{1}{\pi}K_\nu\left(\frac{\alpha^2}{8p}\right)\right]$	$-\frac{\cos\pi\nu}{\sqrt{\pi t}}Y_{2\nu}(\alpha\sqrt{t})$ $\lvert\operatorname{Re}\nu\rvert<\frac{1}{2}$
29.168	$p\sqrt{p+\beta}\,I_\nu[\alpha(p+\beta)]\times$ $\times K_{\nu+\frac{1}{2}}[\alpha(p+\beta)]$	$\dfrac{(-1)^\nu e^{-\beta t}}{\sqrt{\frac{\pi t}{2}(4\alpha^2-t^2)}}\times$ $\times\cos\left[\left(2\nu+\frac{1}{2}\right)\arccos\left(\frac{t}{2\alpha}\right)\right]$
29.169	$pK_\nu[\sqrt{\alpha(p+\beta)}]\,I_\nu[\sqrt{\alpha(p+\beta)}]$	$\frac{1}{2t}\exp\left(-\beta t-\frac{\alpha}{2t}\right)I_\nu\left(\frac{\alpha}{2t}\right)$ $\operatorname{Re}\nu>-1$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt} f(t)\,dt$	$f(t)$
29.170	$pK_\nu[(\sqrt{\alpha}+\sqrt{\beta})\sqrt{p+\gamma}]\times$ $\times I_\nu[(\sqrt{\alpha}-\sqrt{\beta})\sqrt{p+\gamma}]$	$\frac{1}{2t}\exp\left(-\gamma t-\frac{\alpha+\beta}{2t}\right)I_\nu\left(\frac{\alpha-\beta}{2t}\right)$ $\operatorname{Re}\nu>-1$
29.171	$pI_\nu\{\delta[\sqrt{p+\beta}-\sqrt{p+\alpha}]^2\}\times$ $\times K_\nu\{\delta[\sqrt{p+\beta}+\sqrt{p+\alpha}]^2\}$	0 при $t<4\delta$ $\frac{\exp\left[-\frac{1}{2}(\alpha+\beta)t\right]}{\sqrt{t^2-16\delta^2}}\times$ $\times I_{2\nu}\left[\frac{1}{2}(\beta-\alpha)\sqrt{t^2-16\delta^2}\right]$ при $t>4\delta$
29.172	$pe^{4\delta^2 p}I_\nu\{\delta^2[\sqrt{p+\beta}-\sqrt{p+\alpha}]^2\}\times$ $\times K_\nu\{\delta^2[\sqrt{p+\beta}+\sqrt{p+\alpha}]^2\}$	$\frac{\exp\left[-\frac{1}{2}(\alpha+\beta)(t+4\delta^2)\right]}{\sqrt{t(t+8\delta^2)}}\times$ $\times I_{2\nu}\left[\frac{1}{2}(\beta-\alpha)\sqrt{t(t+8\delta)}\right]$
29.173	$pI_\nu\left[\frac{\beta}{2}(\sqrt{p^2+\alpha^2}-p)\right]\times$ $\times K_\nu\left[\frac{\beta}{2}(\sqrt{p^2+\alpha^2}+p)\right]$	0 при $t<\beta$ $\frac{J_{2\nu}(\alpha\sqrt{t^2-\beta^2})}{\sqrt{t^2-\beta^2}}$ при $t>\beta$
29.174	$p[\sin(\alpha p)J_0(\alpha p)-\cos(\alpha p)Y_0(\alpha p)]$	$\frac{\sqrt{2}}{\pi}\frac{\sqrt{t+\sqrt{t^2+4\alpha^2}}}{\sqrt{t(t^2+4\alpha^2)}}$, $\operatorname{Re}\alpha>0$
29.175	$p[\cos(\alpha p)J_0(\alpha p)+\sin(\alpha p)Y_0(\alpha p)]$	$\frac{2^{\frac{3}{2}}\alpha}{\pi}\times$ $\times\frac{1}{\sqrt{t(t^2+4\alpha^2)(t+\sqrt{t^2+4\alpha^2})}}$ $\operatorname{Re}\alpha>0$
29.176	$p[\cos(\alpha p)J_1(\alpha p)+\sin(\alpha p)Y_1(\alpha p)]$	$-\frac{2^{\frac{5}{2}}\alpha^2}{\pi}\frac{\left[t+(t^2+4\alpha^2)^{\frac{1}{2}}\right]^{-\frac{3}{2}}}{\sqrt{t(t^2+4\alpha^2)}}$ $\operatorname{Re}\alpha>0$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.177	$p\,[\sin(\alpha p)\,J_1(\alpha p)-\cos(\alpha p)\,Y_1(\alpha p)]$	$\frac{1}{\sqrt{2}\,\pi\alpha}\,\frac{\left[t+\sqrt{t^2+4\alpha^2}\right]^{\frac{3}{2}}}{\sqrt{t\,(t^2+4\alpha^2)}}$, $\operatorname{Re}\alpha>0$
29.178	$p\sqrt{p+\beta}\,\{J_{\nu+\frac{1}{4}}[\alpha(p+\beta)]\times$ $\times Y_{\nu-\frac{1}{4}}[\alpha(p+\beta)]-$ $-J_{\nu-\frac{1}{4}}[\alpha(p+\beta)]\,Y_{\nu+\frac{1}{4}}[\alpha(p+\beta)]\}$	$\frac{(2\alpha)^{2\nu}e^{-\beta t}\left[t+\sqrt{t^2+4\alpha^2}\right]^{-2\nu}}{\frac{\pi}{2}\sqrt{\frac{\pi}{2}\,t\,(t^2+4\alpha^2)}}$ $\operatorname{Re}\nu>-\frac{3}{4}$
29.179	$p^{-\nu+1}[\cos(\alpha p)\,J_\nu(\alpha p)-$ $-\sin(\alpha p)\,Y_\nu(\alpha p)]$	$-\frac{2t^{\nu-\frac{1}{2}}(t^2+4\alpha^2)^{\frac{\nu}{2}-\frac{1}{4}}}{\sqrt{\pi}\,(2\alpha)^\nu\,\Gamma\left(\nu+\frac{1}{2}\right)}\times$ $\times\sin\left[\left(\nu-\frac{1}{2}\right)\operatorname{arcctg}\left(\frac{t}{2\alpha}\right)\right]$ $\operatorname{Re}\nu>-\frac{1}{2}$, $\operatorname{Re}\alpha>0$
29.180	$p^{-\nu+1}[\sin(\alpha p)\,J_\nu(\alpha p)-$ $-\cos(\alpha p)\,Y_\nu(\alpha p)]$	$\frac{2t^{\nu-\frac{1}{2}}(t^2+4\alpha^2)^{\frac{\nu}{2}-\frac{1}{4}}}{\sqrt{\pi}\,(2\alpha)^\nu\,\Gamma\left(\nu+\frac{1}{2}\right)}\times$ $\times\cos\left[\left(\nu-\frac{1}{2}\right)\operatorname{arcctg}\left(\frac{t}{2\alpha}\right)\right]$ $\operatorname{Re}\nu>-\frac{1}{2}$, $\operatorname{Re}\alpha>0$
29.181	$p^{-\nu+1}[\cos(\alpha p-\beta)\,J_\nu(\alpha p)+$ $+\sin(\alpha p-\beta)\,Y_\nu(\alpha p)]$	$\frac{2t^{\nu-\frac{1}{2}}(t^2+4\alpha^2)^{\frac{\nu}{2}-\frac{1}{4}}}{\sqrt{\pi}\,(2\alpha)^\nu\,\Gamma\left(\nu+\frac{1}{2}\right)}\times$ $\times\sin\left[\left(\frac{1}{2}-\nu\right)\operatorname{arcctg}\left(\frac{t}{2\alpha}\right)+\beta\right]$ $\operatorname{Re}\nu>-\frac{1}{2}$, $\operatorname{Re}\alpha>0$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.182	$p^{-\nu+1}e^{-i\alpha p}H_\nu^{(1)}(\alpha p)$	$-i\dfrac{2(t^2-2i\alpha t)^{\nu-\frac{1}{2}}}{\sqrt{\pi}(2\alpha)^\nu\Gamma\left(\nu+\frac{1}{2}\right)}$ $\operatorname{Re}\nu>-\frac{1}{2},\quad -\frac{\pi}{2}<\arg\alpha<\frac{3\pi}{2}$
29.183	$p^{1-\nu}e^{i\alpha p}H_\nu^{(2)}(\alpha p)$	$\dfrac{i2^{1-\nu}\alpha^{-\nu}}{\sqrt{\pi}\,\Gamma\left(\nu+\frac{1}{2}\right)}(t^2+2\alpha it)^{\nu-\frac{1}{2}}$ $\operatorname{Re}\nu>-\frac{1}{2},\quad -\frac{3\pi}{2}<\arg\alpha<\frac{\pi}{2}$
29.184	$p^{\nu-\lambda+1}J_\nu\left(\dfrac{4a}{p}\right)$	$\dfrac{(2a)^\nu}{\Gamma(\nu+1)\Gamma(\lambda)}t^{\lambda-1}\times$ $\times\,{}_0F_3\left(\nu+1,\frac{\lambda}{2},\frac{\lambda+1}{2};-a^2t^2\right)$ $\operatorname{Re}\lambda>0$
29.185	$\dfrac{p\exp\left(-\frac{ap}{p^2+1}\right)}{\sqrt{p^2+1}}J_\nu\left(\dfrac{a}{p^2+1}\right)$	$J_\nu(t)J_{2\nu}(2\sqrt{at}),\quad \operatorname{Re}\nu>-\frac{1}{2}$
29.186	$p^{-\mu+1}J_\nu\left(\dfrac{1}{\sqrt{p}}\right)$	$\dfrac{t^{\mu+\frac{\nu}{2}-1}\,{}_0F_2\left(\mu+\frac{\nu}{2},\nu+1;-\frac{t}{4}\right)}{2^\nu\Gamma\left(\mu+\frac{\nu}{2}\right)\Gamma(\nu+1)}$ $\operatorname{Re}\left(\mu+\frac{\nu}{2}\right)>0$
29.187	$\dfrac{pe^{ip}H_\nu^{(2)}(\sqrt{p^2+a^2})}{(p^2+a^2)^{\frac{\nu}{2}}}$	$\dfrac{i\sqrt{2}}{\sqrt{\pi}}a^{\frac{1}{2}-\nu}(t^2+2it)^{\frac{\nu}{2}-\frac{1}{4}}\times$ $\times J_{\nu-\frac{1}{2}}(a\sqrt{t^2+2it})$ $\operatorname{Re}\nu>-\frac{1}{2}$
29.188	$p\Gamma\left(p+\frac{1}{2}\right)\left(\frac{a}{2}\right)^{-p}J_p(a)$	$\dfrac{\cos(a\sqrt{1-e^{-t}})}{\sqrt{\pi(e^t-1)}}$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.189	$p\Gamma(p)\left(\frac{a}{2}\right)^{-p}J_{p+\mu}(a)$	$(1-e^{-t})^{\frac{\mu}{2}}J_\mu\left(a\sqrt{1-e^{-t}}\right)$ $\operatorname{Re}\mu>-1$
29.190	$p\sqrt{p}\left[J_{\nu+\frac{1}{4}}(ap)J_{\nu-\frac{1}{4}}(ap)+Y_{\nu+\frac{1}{4}}(ap)Y_{\nu-\frac{1}{4}}(ap)\right]$	$\dfrac{\left(\frac{\pi}{2}\right)^{-\frac{3}{2}}\exp\left[2\nu\operatorname{Arsh}\left(\frac{t}{2a}\right)\right]}{\sqrt{t^3+4a^2t}}$ $\operatorname{Re}a>0$
29.191	$p\sqrt{p}\left[J_{\frac{1}{4}+\nu}(ap)J_{\frac{1}{4}-\nu}(ap)+Y_{\frac{1}{4}+\nu}(ap)Y_{\frac{1}{4}-\nu}(ap)\right]$	$\left(\frac{\pi}{2}\right)^{-\frac{3}{2}}(t^3+4a^2t)^{-\frac{1}{2}}\times\left\{\cos\left[\left(\nu+\frac{1}{4}\right)\pi\right]\times\exp\left[-2\nu\operatorname{Arsh}\left(\frac{t}{2a}\right)\right]+\sin\left[\left(\nu+\frac{1}{4}\right)\pi\right]\times\exp\left[2\nu\operatorname{Arsh}\left(\frac{t}{2a}\right)\right]\right\}$, $\operatorname{Re}a>0$
29.192	$p\sqrt{p}\left[J_{\nu+\frac{1}{4}}(ap)Y_{\nu-\frac{1}{4}}(ap)-J_{\nu-\frac{1}{4}}(ap)Y_{\nu+\frac{1}{4}}(ap)\right]$	$\dfrac{\left(\frac{\pi}{2}\right)^{-\frac{3}{2}}\exp\left[-2\nu\operatorname{Arsh}\left(\frac{t}{2a}\right)\right]}{\sqrt{t^3+4a^2t}}$ $\operatorname{Re}a>0$
29.193	$p\sqrt{p}\left[J_{\frac{1}{4}+\nu}(ap)Y_{\frac{1}{4}-\nu}(ap)-J_{\frac{1}{4}-\nu}(ap)Y_{\frac{1}{4}+\nu}(ap)\right]$	$\left(\frac{\pi}{2}\right)^{-\frac{3}{2}}(t^3+4a^2t)^{-\frac{1}{2}}\times\left\{\operatorname{sh}\left[\left(\nu+\frac{1}{4}\right)\pi\right]\times\exp\left[-2\nu\operatorname{Arsh}\left(\frac{t}{2a}\right)\right]-\cos\left[\left(\nu+\frac{1}{4}\right)\pi\right]\times\exp\left[2\nu\operatorname{Arsh}\left(\frac{t}{2a}\right)\right]\right\}$, $\operatorname{Re}a>0$

№	$\bar{f}(p) = p\int_0^\infty e^{-pt} f(t)\,dt$	$f(t)$
29.194	$p\,[J_{\nu-p}(a)\,Y_{-\nu-p}(a) - J_{-\nu-p}(a)\,Y_{\nu-p}(a)]$	$\frac{2}{\pi^2}\sin(2\nu\pi)\,K_{2\nu}\left[2a\,\mathrm{sh}\left(\frac{t}{2}\right)\right]$ $\mathrm{Re}\,a > 0,\ \lvert\mathrm{Re}\,\nu\rvert < \frac{1}{2}$
29.195	$p\left[J_p(a)\frac{\partial Y_p(a)}{\partial p} - Y_p(a)\frac{\partial J_p(a)}{\partial p}\right]$	$-\frac{2}{\pi}K_0\left[2a\,\mathrm{sh}\left(\frac{t}{2}\right)\right],\quad \mathrm{Re}\,a > 0$
29.196	$p\sqrt{p}\,H^{(1)}_{\frac{1}{8}}\left(\frac{p^2}{a}\right)H^{(2)}_{\frac{1}{8}}\left(\frac{p^2}{a}\right)$	$a\cos\left(\frac{\pi}{8}\right)\sqrt{\frac{2t}{\pi}}\,J_{\frac{1}{8}}\left(\frac{at^2}{16}\right)\times$ $\times J_{-\frac{1}{8}}\left(\frac{at^2}{16}\right),\quad a > 0$
29.197	$\sqrt{p}\,H^{(1)}_\nu\left(\frac{p}{2a}\right)H^{(2)}_\nu\left(\frac{p}{2a}\right)$	$2a\sqrt{\frac{2t}{\pi}}\,P^{\frac{1}{4}}_{\nu-\frac{1}{4}}\left(\sqrt{1+a^2t^2}\right)\times$ $\times P^{-\frac{1}{4}}_{\nu-\frac{1}{4}}\left(\sqrt{1+a^2t^2}\right)$
29.198	$p\sqrt{p}\,H^{(1)}_{\frac{1}{2}+\nu}(ap)\,H^{(2)}_{\frac{1}{2}-\nu}(ap)$	$\frac{4\exp(-\nu\pi i)}{\pi\sqrt{\pi t\,(t^2+4a^2)}}\times$ $\times\left\{\mathrm{ch}\left[2\nu\,\mathrm{Arsh}\left(\frac{t}{2a}\right)\right] +\right.$ $\left.+\,i\,\mathrm{sh}\left[2\nu\,\mathrm{Arsh}\left(\frac{t}{2a}\right)\right]\right\},\quad \mathrm{Re}\,a > 0$
29.199	$p^{-2\nu+1}H^{(1)}_{2\nu}(\sqrt{ap})\,H^{(2)}_{2\nu}(\sqrt{ap})$	$\frac{2a^{-\nu-\frac{1}{2}}}{\Gamma\left(2\nu+\frac{1}{2}\right)}\,t^{3\nu-\frac{1}{2}}\exp\left(\frac{a}{2t}\right)\times$ $\times W_{\nu,\nu}\left(\frac{a}{t}\right),\quad \mathrm{Re}\,\nu > -\frac{1}{4}$
29.200	$p\sqrt{p}\,[H^{(1)}_\nu(\sqrt{ap})\,H^{(2)}_{\nu+1}(\sqrt{ap}) + H^{(1)}_{\nu+1}(\sqrt{ap})\,H^{(2)}_\nu(\sqrt{ap})]$	$\frac{4\nu+2}{\pi\sqrt{a\pi}}\exp\left(\frac{a}{2t}\right)W_{-\frac{1}{2},\ \nu+\frac{1}{2}}\left(\frac{a}{t}\right)$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.201	$p^{-2\lambda+1}H_{2\mu}^{(1)}\left(\frac{p}{a}\right)H_{2\nu}^{(2)}\left(\frac{p}{a}\right)$	$\frac{2(2\lambda+1)a}{\pi\Gamma(2\lambda+2)\exp[(\mu-\nu)\pi i]}\times$ $\times t^{2\lambda}\,{}_4F_3\left(\frac{1}{2}+\mu+\nu,\ \frac{1}{2}-\mu+\nu,\right.$ $\frac{1}{2}+\mu-\nu,\ \frac{1}{2}-\mu-\nu;$ $\left.\frac{1}{2},\ \lambda+\frac{1}{2},\ \lambda+1;\ -\frac{a^2t^2}{4}\right)+$ $+\frac{i4a^2(\mu^2-\nu^2)}{\pi\Gamma(2\lambda+2)\exp[(\mu-\nu)\pi i]}\times$ $\times t^{2\lambda+1}\,{}_4F_3\left(1+\mu+\nu,\ 1+\nu-\mu,\right.$ $1-\mu-\nu,\ 1+\mu-\nu;\ \frac{3}{2},\ \lambda+1,$ $\left.\lambda+\frac{3}{2};\ -\frac{a^2t^2}{4}\right),\ \operatorname{Re}\lambda>-\frac{1}{2}$
29.202	$pI_\nu\left[\frac{b}{2}(\sqrt{p^2+a^2}-p)\right]\times$ $\times K_\nu\left[\frac{b}{2}(\sqrt{p^2+a^2}+p)\right]$	0 при $0<t<b$ $\frac{J_{2\nu}(a\sqrt{t^2-b^2})}{\sqrt{t^2-b^2}}$ при $t>b$ $\operatorname{Re}\nu>-\frac{1}{2}$
29.203	$pI_{\nu+p}(c)K_{\nu-p}(c)$	$\frac{1}{2}J_{2\nu}\left(2c\operatorname{sh}\frac{t}{2}\right),\ c>0$ $\operatorname{Re}\nu>-\frac{1}{2}$
29.204	$p^{2\nu+1}[K_{2\nu}(\sqrt{ap})]^2$	$\frac{1}{2}\sqrt{\pi}\,a^{\nu-\frac{1}{2}}\,t^{-3\nu-\frac{1}{2}}\times$ $\times\exp\left(-\frac{a}{2t}\right)W_{\nu,\nu}\left(\frac{a}{t}\right),\ \operatorname{Re}a>0$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.205	$p\exp\left[\frac{1}{2}(\alpha+\beta)p\right]K_{2\nu}\left(\frac{\alpha p}{2}\right)\times$ $\times K_{2\nu}\left(\frac{\beta p}{2}\right)$	$\pi(\alpha\beta)^{\nu-\frac{1}{4}}(\alpha+t)^{-\nu-\frac{1}{4}}\times$ $\times(\beta+t)^{-\nu-\frac{1}{4}}\times$ $\times P_{2\nu-\frac{1}{2}}\left[\frac{2(\alpha+t)(\beta+t)}{\alpha\beta}-1\right]$ $\lvert\arg\alpha\rvert<\pi,\ \lvert\arg\beta\rvert<\pi$
29.206	$p\sqrt{p}\,K_{\nu+\frac{1}{2}}(\sqrt{ap})\,K_{\nu-\frac{1}{2}}(\sqrt{ap})$	$\frac{1}{2}\sqrt{\frac{\pi}{2a}}\,\frac{\exp\left(-\frac{a}{2t}\right)}{t}\,W_{\frac{1}{2},\,\nu}\left(\frac{a}{t}\right)$ $\operatorname{Re}a>0$
29.207	$pK_\nu(\sqrt{ap}+\sqrt{bp})K_\nu(\sqrt{ap}-\sqrt{bp})$	$\exp\left[-\frac{a+b}{2t}\right]K_\nu\left(\frac{a-b}{2t}\right)$ $\operatorname{Re}a>0,\ \operatorname{Re}b>0$
29.208	$pK_\nu\left(\sqrt{\frac{\lambda}{a}(\sqrt{p^2-a^2}+p)}\right)\times$ $\times K_\nu\left(\sqrt{\frac{\lambda a}{\sqrt{p^2-a^2}+p}}\right)$	$\frac{1}{2t}\exp\left(-\frac{\lambda}{2at}\right)K_\nu(a\lambda t)$ $\operatorname{Re}\left(\frac{\lambda}{a}\right)>0$
29.209	$p\,[I_0(p)-\mathbf{L}_0(p)]$	0 при $t>1$ $\frac{2}{\pi\sqrt{1-t^2}}$ при $t<1$
29.210	$I_0(p)-\mathbf{L}_0(p)$	0 при $t>1$ $\frac{2}{\pi}\arcsin t$ при $t<1$
29.211	$\sqrt{p}\,[I_0(2a\sqrt{p})-\mathbf{L}_0(2a\sqrt{p})]$	$\frac{1}{\sqrt{\pi t}}\exp\left(-\frac{a^2}{2t}\right)I_0\left(\frac{a^2}{2t}\right)$ $\operatorname{Re}a>0$
29.212	$\sqrt{p}\left[I_{\frac{1}{2}}(\alpha\sqrt{p})-\mathbf{L}_{\frac{1}{2}}(\alpha\sqrt{p})\right]$	$\frac{\exp\left(-\frac{\alpha^2}{8t}\right)}{\alpha\sqrt{2\pi t}}\left[I_{\frac{1}{4}}\left(\frac{\alpha^2}{8t}\right)-\right.$ $\left.-I_{-\frac{1}{4}}\left(\frac{\alpha^2}{8t}\right)\right]+\frac{\Gamma\left(\frac{1}{4}\right)}{\pi\sqrt{\alpha\pi}\sqrt[4]{t}}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.213	$\sqrt{\pi}\,\Gamma\left(\nu+\frac{1}{2}\right)p^{1-\nu}\times$ $\times[I_\nu(bp)-\mathbf{L}_\nu(bp)]$	$2^{1-\nu}b^{-\nu}(b^2-t^2)^{\nu-\frac{1}{2}}$ при $0<t<b$ 0 при $t>b$ $\operatorname{Re}\nu>-\frac{1}{2},\ b>0$
29.214	$\sqrt{\pi}\,(2b)^\nu\,\Gamma\left(\nu+\frac{1}{2}\right)\times$ $\times p^{1-\nu}e^{-bp}\mathbf{L}_\nu(bp)$	$(2bt-t^2)^{\nu-\frac{1}{2}}$ при $0<t<b$ $-(2bt-t^2)^{\nu-\frac{1}{2}}$ при $b<t<2b$ 0 при $t>2b$ $\operatorname{Re}\nu>-\frac{1}{2},\ b>0$
29.215	$\frac{1}{2}\sqrt{\pi}\,\Gamma\left(\nu+\frac{1}{2}\right)p^{1-\nu}\frac{\mathbf{L}_\nu(p)}{\operatorname{sh}p}$	$[2(t-2k)-(t-2k)^2]^{\nu-\frac{1}{2}}$ при $2k<t<2k+1$ $-[2(t-2k)-(t-2k)^2]^{\nu-\frac{1}{2}}$ при $2k+1<t<2k+2$ $k=0,\ 1,\ 2,\ \ldots;\ \operatorname{Re}\nu>-\frac{1}{2}$
29.216	$\Gamma\left(\nu+\frac{1}{2}\right)p^{1-\nu}\frac{I_\nu(p)-\mathbf{L}_\nu(p)}{\operatorname{sh}\frac{p}{2}}$	0 при $0<t<\frac{1}{2}$ $\frac{4}{\sqrt{\pi}}\left[\frac{3}{4}+t-k-(t-k)^2\right]^{\nu-\frac{1}{2}}$ при $k+\frac{1}{2}<t<k+\frac{3}{2}$ $k=0,\ 1,\ 2,\ \ldots;\ \operatorname{Re}\nu>-\frac{1}{2}$
29.217	$\mathbf{H}_0(p)-Y_0(p)$	$\frac{2}{\pi}\operatorname{Arsh}t$
29.218	$p\,[\mathbf{H}_0(p)-Y_0(p)]$	$\frac{2}{\pi\sqrt{t^2+1}}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt} f(t)\,dt$	$f(t)$
29.219	$p\,[\mathbf{H}_1(p)-Y_1(p)]$	$\dfrac{2\left(t+\sqrt{t^2+1}\right)}{\pi\sqrt{t^2+1}}$
29.220	$p^{\nu+1}\,[\mathbf{H}_{-\nu}(p)-Y_{-\nu}(p)]$	$\dfrac{2^{\nu+1}\Gamma\left(\nu+\dfrac{1}{2}\right)\cos\nu\pi}{\pi\sqrt{\pi}\left(\sqrt{t^2+1}\right)^{2\nu+1}}$ $-\dfrac{1}{2}<\operatorname{Re}\nu<\dfrac{3}{2}$
29.221	$\sqrt{p}\,[\mathbf{H}_0(\alpha\sqrt{p})-Y_0(\alpha\sqrt{p})]$	$\dfrac{2}{\pi\sqrt{\pi t}}\exp\left(\dfrac{\alpha^2}{8t}\right)K_0\left(\dfrac{\alpha^2}{8t}\right)$
29.222	$p\,[Y_{-1}(\alpha\sqrt{p})-\mathbf{H}_{-1}(\alpha\sqrt{p})]$	$\dfrac{\alpha}{4\pi t\sqrt{\pi t}}\exp\left(\dfrac{\alpha^2}{8t}\right)\times$ $\times\left[K_1\left(\dfrac{\alpha^2}{8t}\right)-K_0\left(\dfrac{\alpha^2}{8t}\right)\right]$
29.223	$p^{\frac{\nu+1}{2}}\,[\mathbf{H}_{-\nu}(\alpha\sqrt{p})-Y_{-\nu}(\alpha\sqrt{p})]$	$\dfrac{(2\alpha)^\nu\,\Gamma\left(\nu+\dfrac{1}{2}\right)}{\sqrt{t}}\times$ $\times\displaystyle\int\limits_0^\infty \frac{\exp\left(-\frac{\tau^2}{4t}\right)}{(\tau^2+\alpha^2)^{\nu+\frac{1}{2}}}\,d\tau$ $-\dfrac{1}{2}<\operatorname{Re}\nu<2,\quad \alpha>0$
29.224	$\dfrac{\pi}{2}\,p\,[\mathbf{H}_1(\alpha p)-Y_1(\alpha p)]-p$	$\dfrac{t}{\alpha\sqrt{t^2+\alpha^2}},\quad \lvert\arg\alpha\rvert<\dfrac{\pi}{2}$
29.225	$p^{1-\nu}\,[\mathbf{H}_\nu(ap)-Y_\nu(ap)]$	$\dfrac{2^{1-\nu}a^{-\nu}}{\sqrt{\pi}\,\Gamma\left(\nu+\dfrac{1}{2}\right)}(t^2+a^2)^{\nu-\frac{1}{2}}$ $\operatorname{Re}a>0$
29.226	$p\sqrt{p}\left[\mathbf{H}_{\frac{1}{4}}\left(\dfrac{p^2}{a}\right)-Y_{\frac{1}{4}}\left(\dfrac{p^2}{a}\right)\right]$	$a\sqrt{\dfrac{t}{\pi}}\,J_{-\frac{1}{4}}\left(\dfrac{at^2}{4}\right),\quad a>0$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.227	$p\sqrt{p}\left[\mathbf{H}_{-\frac{1}{4}}\left(\frac{p^2}{a}\right)-Y_{-\frac{1}{4}}\left(\frac{p^2}{a}\right)\right]$	$a\sqrt{\frac{t}{\pi}}J_{\frac{1}{4}}\left(\frac{at^2}{4}\right),\quad a>0$
29.228	$p^{\frac{5}{2}}\left[\mathbf{H}_{-\frac{3}{4}}\left(\frac{p^2}{a}\right)-Y_{-\frac{3}{4}}\left(\frac{p^2}{a}\right)\right]$	$-\frac{a^2}{2\sqrt{\pi}}t^{\frac{3}{2}}J_{-\frac{1}{4}}\left(\frac{at^2}{4}\right),\quad a>0$
29.229	$p^{\frac{5}{2}}\left[\mathbf{H}_{-\frac{1}{4}}\left(\frac{p^2}{a}\right)-Y_{-\frac{1}{4}}\left(\frac{p^2}{a}\right)\right]$	$\frac{a^2}{2\sqrt{\pi}}t^{\frac{3}{2}}J_{-\frac{3}{4}}\left(\frac{at^2}{4}\right),\quad a>0$
29.230	$p^{-\lambda+1}\mathbf{H}_\nu\left(\frac{2a}{p}\right)$	$\frac{2a^{\nu+1}}{\sqrt{\pi}\,\Gamma\left(\nu+\frac{3}{2}\right)\Gamma(\lambda+\nu+1)}\times$ $\times t^{\lambda+\nu}\,{}_1F_4\left(1;\ \frac{3}{2},\ \nu+\frac{3}{2},\ \frac{\lambda+\nu+1}{2},\ \frac{\lambda+\nu}{2}+1;\ -\frac{a^2t^2}{4}\right)$ $\operatorname{Re}(\lambda+\nu)>-1$
29.231	$p^{-\frac{\nu}{2}+1}[\mathbf{H}_{-\nu}(\alpha\sqrt{p})-Y_{-\nu}(\alpha\sqrt{p})]$	$2^\nu\pi^{-1}\alpha^{-\nu}\cos(\nu\pi)\,t^{\nu-1}\times$ $\times\exp\left(\frac{\alpha^2}{4t}\right)\operatorname{erfc}\left(\frac{\alpha}{2\sqrt{t}}\right)$ $\operatorname{Re}\nu>-\frac{1}{2}$
29.232	$p^{-\frac{\nu}{2}+\frac{1}{2}}[\mathbf{H}_\nu(\alpha\sqrt{p})-Y_\nu(\alpha\sqrt{p})]$	$\frac{2t^{-\frac{\nu}{2}}}{\alpha\sqrt{\pi}\,\Gamma\left(\frac{1}{2}+\nu\right)}\times$ $\times\exp\left(\frac{\alpha^2}{8t}\right)W_{\frac{\nu}{2},\,\frac{\nu}{2}}\left(\frac{\alpha^2}{4t}\right)$
29.233	$p\Gamma\left(p+\frac{1}{2}\right)2^pa^{-p}\mathbf{H}_p(a)$	$\frac{\sin\left(a\sqrt{1-e^{-t}}\right)}{\sqrt{\pi(e^t-1)}}$

№	$\overline{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.234	$\frac{\pi}{2}p\,[\mathbf{L}_1(bp)-I_1(bp)]+p$	$\frac{t}{b\sqrt{b^2-t^2}}$ при $0<t<b$ 0 при $t>b$, $b>0$
29.235	$p^{-\lambda+1}\mathbf{L}_\nu\left(\frac{2a}{p}\right)$ $\operatorname{Re}(\lambda+\nu)>-1$	$\frac{2a^{\nu+1}t^{\lambda+\nu}}{\sqrt{\pi}\,\Gamma\left(\nu+\frac{3}{2}\right)\Gamma(\lambda+\nu+1)}\times$ $\times{}_1F_4\left(1;\ \frac{3}{2},\ \nu+\frac{3}{2},\ \frac{\lambda+\nu+1}{2},\ \frac{\lambda+\nu}{2}+1;\ \frac{a^2t^2}{4}\right)$
29.236	$p^{-\frac{\nu}{2}+1}[\mathbf{L}_{-\nu}(a\sqrt{p})-I_\nu(a\sqrt{p})]$	$\frac{i2^\nu\cos(\nu\pi)}{\pi a^\nu}t^{\nu-1}\times$ $\times\exp\left(\frac{a^2}{4t}\right)\operatorname{erf}\left(\frac{ia}{2\sqrt{t}}\right)$ $\operatorname{Re}\nu>-\frac{1}{2}$
29.237	$p\Gamma\left(\frac{1}{2}-p\right)\left(\frac{b}{2}\right)^p[I_p(b)-\mathbf{L}_{-p}(b)]$	$\frac{\sin(b\sqrt{e^t-1})}{\sqrt{\pi(1-e^{-t})}},\quad b>0$
29.238	$p\,[\mathbf{E}_0(p)+Y_0(p)]$	$-\frac{2}{\pi\sqrt{t^2+1}}$
29.239	$p\,[\mathbf{E}_\nu(p)+Y_\nu(p)]$	$-\frac{(\sqrt{t^2+1}+t)^\nu}{\pi\sqrt{t^2+1}}+$ $+\frac{\cos(\nu\pi)(\sqrt{t^2+1}-t)^\nu}{\pi\sqrt{t^2+1}}$
29.240	$p\,[\mathbf{J}_\nu(p)-J_\nu(p)]$	$\frac{\sin(\nu\pi)}{\pi}\,\frac{(\sqrt{t^2+1}-t)^\nu}{\sqrt{t^2+1}}$
29.241	$\frac{p\,[\mathbf{J}_p(\alpha)-J_p(\alpha)]}{\sin(\pi p)}$	$\frac{1}{\pi}\exp(-\alpha\operatorname{sh}t),\quad \operatorname{Re}\alpha\geqslant 0$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.242	$pS_{0,0}(p)$	$\frac{1}{\sqrt{t^2+1}}$
29.243	$\frac{1}{p}S_{2,0}(p)$	$\sqrt{1+t^2}-t\operatorname{Arsh}t$
29.244	$S_{0,\nu}(p)$	$\frac{1}{\nu}\operatorname{sh}(\nu\operatorname{Arsh}t)=$ $=\frac{1}{2\nu}\left[\left(\sqrt{t^2+1}+t\right)^\nu-\right.$ $\left.-\left(\sqrt{t^2+1}-t\right)^\nu\right]$
29.245	$pS_{0,\nu}(p)$	$\frac{1}{\sqrt{t^2+1}}\operatorname{ch}(\nu\operatorname{Arsh}t)=$ $=\frac{\left(\sqrt{t^2+1}+t\right)^\nu+\left(\sqrt{t^2+1}-t\right)^\nu}{2\sqrt{t^2+1}}$
29.246	$S_{1,\nu}(p)$	$\operatorname{ch}(\nu\operatorname{Arsh}t)=$ $=\frac{1}{2}\left[\left(\sqrt{t^2+1}+t\right)^\nu+\right.$ $\left.+\left(\sqrt{t^2+1}-t\right)^\nu\right]$
29.247	$pS_{-1,\nu}(p)$	$\frac{\operatorname{sh}(\nu\operatorname{Arsh}t)}{\nu\sqrt{t^2+1}}=$ $=\frac{\left(\sqrt{t^2+1}+t\right)^\nu-\left(\sqrt{t^2+1}-t\right)^\nu}{2\nu\sqrt{t^2+1}}$
29.248	$S_{2,\nu}(p)-p$	$\left(\nu-\frac{1}{\nu}\right)\operatorname{sh}(\nu\operatorname{Arsh}t)=$ $=\frac{1}{2}\left(\nu-\frac{1}{\nu}\right)\left[\left(\sqrt{t^2+1}+t\right)^\nu-\right.$ $\left.-\left(\sqrt{t^2+1}-t\right)^\nu\right]$
29.249	$\frac{1}{p}S_{2,\nu}(p)$	$1+\left(\nu-\frac{1}{\nu}\right)\int\limits_0^t\operatorname{sh}(\nu\operatorname{Arsh}\tau)\,d\tau$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
29.250	$p^{2-2\lambda-\mu}S_{\mu,\nu}\left(\frac{p}{a}\right)$	$\frac{a^{1-\mu}t^{2\lambda-1}}{\Gamma(2\lambda)}\times$ $\times {}_3F_2\left(1,\ \frac{1-\mu+\nu}{2},\ \frac{1-\mu-\nu}{2};\ \lambda,\ \lambda+\frac{1}{2};\ -a^2t^2\right)$ $\operatorname{Re}\lambda>0,\quad \operatorname{Re}a>0$
29.251	$p\sqrt{p}\,S_{-\mu-1,\frac{1}{4}}\left(\frac{p^2}{2}\right)$	$\frac{2^{2\mu+1}}{\Gamma\left(2\mu+\frac{3}{2}\right)}\sqrt{t}\,s_{\mu,\frac{1}{4}}\left(\frac{t^2}{2}\right)$ $\operatorname{Re}\mu>-\frac{3}{4}$
29.252	$p^{-\mu+\frac{1}{2}}S_{2\mu,2\nu}(2\sqrt{\alpha p})$	$2^{2\mu-1}\alpha^{-\frac{1}{2}}t^{\mu}\exp\left(\frac{\alpha}{2t}\right)W_{\mu,\nu}\left(\frac{\alpha}{t}\right)$ $\operatorname{Re}(\mu\pm\nu)>-\frac{1}{2},\quad \lvert\arg\alpha\rvert<\pi$
29.253	$p^{-\frac{\nu}{2}+1}S_{\mu,\nu}(2\sqrt{\alpha p})$	$2^{\mu-1}\alpha^{-\frac{\nu}{2}}t^{\nu-1}\exp\left(\frac{\alpha}{t}\right)\times$ $\times\Gamma\left(\frac{\mu+\nu+1}{2},\ \frac{\alpha}{t}\right)$ $\operatorname{Re}(\mu-\nu)<1,\quad \lvert\arg\alpha\rvert<\pi$

§ 30. Шаровые функции

30.1	$P_\nu(p)$	$-\frac{\sin\nu\pi}{\pi t}W_{0,\nu+\frac{1}{2}}(2t),\ 0<\operatorname{Re}\nu<1$
30.2	$pP_\nu(p)$	$-\sqrt{\frac{2}{\pi t}}\,\frac{\sin\nu\pi}{\pi}K_{\nu+\frac{1}{2}}(t)$ $-1<\operatorname{Re}\nu<0$

№	$\bar{f}(p) = p \int_0^\infty e^{-pt} f(t)\, dt$	$f(t)$
30.3	$p(p^2-a^2)^{\frac{\mu}{2}} P_\nu^\mu\left(\frac{p}{a}\right)$	$\frac{\sqrt{2a}\, t^{-\mu-\frac{1}{2}}}{\sqrt{\pi}\,\Gamma(-\mu+\nu+1)\,\Gamma(-\mu-\nu)} \times$ $\times K_{\nu+\frac{1}{2}}(at)$ $\operatorname{Re}\mu - 1 < \operatorname{Re}\nu < -\operatorname{Re}\mu$
30.4	$\frac{1}{p^n} P_n\left(1-\frac{1}{p}\right)$	$\frac{t^n}{n!} L_n\left(\frac{t}{2}\right)$
30.5	$p(p+\beta)^{-n-1} P_n\left(\frac{p+\alpha}{p+\beta}\right)$	$\frac{t^n}{n!} e^{-\beta t} L_n\left(\frac{\beta-\alpha}{2} t\right)$
30.6	$p(p+\beta)^{-\nu} P_n\left(\frac{p+\alpha}{p+\beta}\right)$	$\frac{t^{\nu-1}}{\Gamma(\nu)} e^{-\beta t} {}_2F_2\left(-n, n+1;\right.$ $\left.1, \nu; \frac{\beta-\alpha}{2} t\right), \quad \operatorname{Re}\nu > 0$
30.7	$\left(\frac{p-\alpha-\beta}{p}\right)^n \times$ $\times P_n\left[\frac{p^2-(\alpha+\beta)p+2\alpha\beta}{p(p-\alpha-\beta)}\right]$	$L_n(\alpha t)\, L_n(\beta t)$
30.8	$\sqrt{p} P_n\left(\frac{1}{p}\right)$	$\frac{\operatorname{He}_n(\sqrt{2t})\,\operatorname{He}_n(i\sqrt{2t})}{n!\, i^n \sqrt{\pi t}}$
30.9	$\frac{p(\alpha+\beta-p)^{\frac{n}{2}}}{(\alpha+\beta+p)^{\frac{n}{2}+\frac{1}{2}}} \times$ $\times P_n\left(\sqrt{\frac{4\alpha\beta}{(\alpha+\beta)^2-p^2}}\right)$	$\frac{\exp(-2\alpha t)}{n!\sqrt{\pi t}} \operatorname{He}_n(2\sqrt{\alpha t}) \times$ $\times \operatorname{He}_n(2\sqrt{\beta t})$
30.10	$\frac{p P_\nu^m\left(\frac{p}{\sqrt{p^2+a^2}}\right)}{(\sqrt{p^2+a^2})^{\nu+1}}$	$\frac{t^\nu J_{-m}(at)}{\Gamma(\nu-m+1)}, \; m > 0, \; \operatorname{Re}\nu > m-1$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
30.11	$\Gamma(-2\nu)p^{\nu+1}(a^2-p^2)^{\frac{\nu}{2}}P_\nu^\nu\left(\frac{a}{p}\right)$	$\sqrt{\frac{\pi}{2}}\left(\frac{t}{a}\right)^{-\nu-\frac{1}{2}}\times$ $\times[I_{-\nu-\frac{1}{2}}(at)-\mathbf{L}_{-\nu-\frac{1}{2}}(at)]$ $\operatorname{Re}\nu<0$
30.12	$\Gamma(-2\nu)p^{\nu+2}(a^2-p^2)^{\frac{\nu}{2}}P_\nu^\nu\left(\frac{a}{p}\right)$	$a\sqrt{\frac{\pi}{2}}\left(\frac{t}{a}\right)^{-\nu-\frac{1}{2}}\times$ $\times[I_{-\nu-\frac{3}{2}}(at)-\mathbf{L}_{-\nu-\frac{3}{2}}(at)]$ $\operatorname{Re}\nu<-\frac{1}{2}$
30.13	$p^{-\frac{\nu}{2}+\frac{1}{2}}(p-a)^{\frac{\mu}{2}}P_\nu^\mu\left(\sqrt{\frac{a}{p}}\right)$	$\frac{t^{\frac{1}{2}(\nu-\mu-1)}\exp\left(\frac{at}{2}\right)D_{\mu+\nu}(\sqrt{2at})}{\sqrt{\pi}\,2^{\frac{1}{2}(\mu-\nu-1)}\Gamma(\nu-\mu+1)}$ $\operatorname{Re}\mu<1,\ \operatorname{Re}(\nu-\mu)>-1$
30.14	$(p^2-a^2)^{-\frac{\nu+1}{2}}P_\nu^\mu\left(\frac{p}{\sqrt{p^2-a^2}}\right)$	$\frac{t^\nu I_{-\mu}(at)}{\Gamma(\nu-\mu+1)}$, $\operatorname{Re}(\nu-\mu)>-1$
30.15	$\sqrt{p}\left[P^\mu_{-\frac{1}{4}}\left(\frac{\sqrt{p^2+a^2}}{p}\right)\right]^2$	$\frac{2^{\frac{1}{2}-\mu}\left[J_{-\mu}\left(\frac{at}{2}\right)\right]^2}{\Gamma\left(\frac{1}{2}-2\mu\right)\sqrt{t}}$, $\operatorname{Re}\mu<\frac{1}{4}$
30.16	$\sqrt{p}\,P^\mu_{-\frac{1}{4}}\left(\frac{\sqrt{p^2+a^2}}{p}\right)\times$ $\times P^{-\mu}_{-\frac{1}{4}}\left(\frac{\sqrt{p^2+a^2}}{p}\right)$	$\sqrt{\frac{2}{\pi}}\,t^{-\frac{1}{2}}J_\mu\left(\frac{at}{2}\right)J_{-\mu}\left(\frac{at}{2}\right)$

№	$\bar f(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
30.17	$\sqrt{\frac{p}{p^2+a^2}}\,P^{\mu}_{\frac{1}{4}}\left(\frac{\sqrt{p^2+a^2}}{p}\right)\times$ $\times P^{\mu}_{-\frac{1}{4}}\left(\frac{\sqrt{p^2+a^2}}{p}\right)$	$\frac{2^{\frac{3}{2}-\mu}}{a\Gamma\left(\frac{3}{2}-2\mu\right)}\sqrt{t}\left[J_{-\mu}\left(\frac{at}{2}\right)\right]^2$ $\operatorname{Re}\mu<\frac{3}{4}$
30.18	$\frac{p\Gamma(p-\mu+\nu+1)\,\Gamma(p-\mu-\nu)}{\Gamma(p+1)}\times$ $\times\left(\frac{a}{a-2}\right)^{\frac{p}{2}}P_{\nu}^{\mu-p}(a-1)$	$\left[(e^t-1)\left(\frac{ae^t}{a-2}-1\right)\right]^{\frac{\mu}{2}}\times$ $\times P_{\nu}^{-\mu}(ae^t+1-a)$ $\operatorname{Re}a>0,\ \operatorname{Re}\mu>-1$
30.19	$\sqrt{\pi}\,p2^{p+\frac{1}{2}}\,\Gamma(p)\,(\mu^2-1)^{\frac{1}{4}-\frac{p}{2}}\times$ $\times P^{\frac{1}{2}-p}_{\alpha+p-\frac{1}{2}}(\mu)$	$(1-e^{-t})^{-\frac{1}{2}}\times$ $\times\{[\mu+\sqrt{(\mu^2-1)(1-e^{-t})}]^{\alpha}+$ $+[\mu-\sqrt{(\mu^2-1)(1-e^{-t})}]^{\alpha}\}$
30.20	$\frac{\sqrt{\pi}\Gamma(2p)\,\Gamma(2\nu+1)\,p}{2^{p+\nu-1}\Gamma\left(p+\nu+\frac{1}{2}\right)}e^{-\alpha p}\times$ $\times P_{\nu-p}^{-\nu-p}(\sqrt{1-e^{-2\alpha}})$	0 при $0<t<2\alpha$ $e^{\nu\alpha}\times$ $\times\frac{[e^{-\alpha}\sqrt{1-e^{-t}}-e^{-\frac{t}{2}}\sqrt{1-e^{-2\alpha}}]^{2\nu}}{\sqrt{1-e^{-t}}}$ при $t>2\alpha$ $\operatorname{Re}\nu>-\frac{1}{2},\ \alpha>0$
30.21	$pQ_{\nu}(p)$	$\sqrt{\frac{\pi}{2t}}\,I_{\nu+\frac{1}{2}}(t),\quad \operatorname{Re}\nu>-1$
30.22	$pQ_{\nu}\left(\frac{p^2+a^2+b^2}{2ab}\right)$	$\pi\sqrt{ab}\,J_{\nu+\frac{1}{2}}(at)\,J_{\nu+\frac{1}{2}}(bt)$ $\operatorname{Re}\nu>-\frac{1}{2}$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
30.23	$pQ_n\left(\sqrt{\frac{p}{a}}\right)$	$\frac{n\Gamma\left(\frac{n}{2}\right)\exp\left(\frac{at}{2}\right)}{4\Gamma\left(n+\frac{3}{2}\right)\sqrt[4]{at^5}}\times$ $\times M_{-\frac{1}{4},\ \frac{n}{2}+\frac{1}{4}}(at),\quad n>0$
30.24	$\frac{pQ_\nu^\mu(p)}{(p^2-1)^{\frac{\mu}{2}}}=\frac{pQ_\nu^\mu(p)}{\mathrm{sh}^\mu(\mathrm{Arch}\,p)}$	$-\sqrt{\frac{\pi}{2}}\frac{\sin(\mu+\nu+1)\pi}{\sin\nu\pi}\times$ $\times t^{\mu-\frac{1}{2}}I_{\nu+\frac{1}{2}}(t)$ $\mathrm{Re}(\mu+\nu)>-1$
30.25	$pQ_p^\mu(\alpha)$	$\frac{\exp\left(-\frac{t}{2}\right)\left(-\sqrt{\alpha^2-1}\right)^\mu}{\sqrt{\frac{2}{\pi}}\Gamma\left(\frac{1}{2}-\mu\right)(\mathrm{ch}\,t-\alpha)^{\mu+\frac{1}{2}}}$ при $t>\mathrm{Arch}\,\alpha$ 0 при $t<\mathrm{Arch}\,\alpha$ $\mathrm{Re}\,\mu<\frac{1}{2}$
30.26	$p(p^2-a^2)^{-\frac{\nu+1}{2}}Q_\nu^\mu\left(\frac{p}{\sqrt{p^2-a^2}}\right)$	$\frac{\sin(\mu+\nu)\pi}{\sin(\nu\pi)}\frac{t^\nu K_\mu(at)}{\Gamma(\nu-\mu+1)}$, $\mathrm{Re}(\nu\pm\mu)>-1$
30.27	$p^{1-\lambda}Q_{2\nu}(\sqrt{p})$	$\frac{\sqrt{\pi}\,\Gamma(2\nu+1)\,t^{\lambda+\nu-\frac{1}{2}}}{2^{2\nu+1}\Gamma\left(2\nu+\frac{3}{2}\right)\Gamma\left(\lambda+\nu+\frac{1}{2}\right)}\times$ $\times{}_2F_2\left(\nu+\frac{1}{2},\ \nu+1;\ 2\nu+\frac{3}{2},\ \lambda+\nu+\frac{1}{2};\ t\right)$, $\mathrm{Re}(\lambda+\nu)>-\frac{1}{2}$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
30.28	$\Gamma\left(\frac{1}{2}-\mu\right)pQ^{\mu}_{p-\frac{1}{2}}(\operatorname{ch}\alpha)$	0 при $0<t<\alpha$ $\sqrt{\frac{\pi}{2}}\exp(i\mu\pi)(\operatorname{sh}\alpha)^{\mu}\times$ $\times(\operatorname{ch}t-\operatorname{ch}\alpha)^{-\mu-\frac{1}{2}}$ при $t>\alpha$ $\operatorname{Re}\mu<\frac{1}{2},\ \alpha>0$
30.29	$\Gamma\left(\frac{1}{2}-\mu\right)e^{\alpha p}pQ^{\mu}_{p-\frac{1}{2}}(\operatorname{ch}\alpha)$	$\frac{\sqrt{\pi}}{2^{\mu+1}}\exp(i\mu\pi)(\operatorname{sh}\alpha)^{\mu}\times$ $\times\left[\operatorname{sh}\left(\frac{t}{2}\right)\operatorname{sh}\left(\alpha+\frac{t}{2}\right)\right]^{-\mu-\frac{1}{2}}$ $\operatorname{Re}\mu<\frac{1}{2},\ \vert\arg\alpha\vert<\pi$
30.30	$2^{p+1}p\exp[i\pi(p-\alpha)]\times$ $\times(\mu^2-1)^{\frac{1}{2}(p-\alpha)}\Gamma(p)\,Q^{\alpha-p}_{p-1}(\mu)$	$\frac{\Gamma(\alpha)}{\sqrt{1-e^{-t}}}\left\{\left(\mu+\sqrt{1-e^{-t}}\right)^{-\alpha}+\right.$ $\left.+\left(\mu-\sqrt{1-e^{-t}}\right)^{-\alpha}\right\}$
30.31	$\sqrt{c}\,\Gamma\left(\mu+\nu+\frac{1}{2}\right)\times$ $\times P^{-\mu}_{\nu-\frac{1}{2}}(\operatorname{ch}\alpha)\,P^{-\nu}_{\mu-\frac{1}{2}}(\operatorname{ch}\beta)\,p$	$\frac{I_{\mu}(at)\,I_{\nu}(bt)}{\sqrt{t}}$, $\operatorname{sh}\alpha=ac,\ \operatorname{sh}\beta=bc,$ $\operatorname{ch}\alpha\operatorname{ch}\beta=cp,\ \operatorname{Re}(p\pm a\pm b)>0$ $\vert\operatorname{Im}\alpha\vert<\frac{\pi}{2},$ $\vert\operatorname{Im}\beta\vert<\frac{\pi}{2},\ \operatorname{Re}(\mu+\nu)>-\frac{1}{2}$

§ 31. Эллиптические функции

31.1	$p\,\frac{a}{\sqrt{p^2+a^2}}\,B\left(\frac{a}{\sqrt{p^2+a^2}}\right)$	$\frac{\pi a}{4}\left[J_0^2\left(\frac{at}{2}\right)-J_1^2\left(\frac{at}{2}\right)\right]$
31.2	$p\left(\frac{a}{\sqrt{p^2+a^2}}\right)^3C\left(\frac{a}{\sqrt{p^2+a^2}}\right)$	$\frac{\pi a}{2}J_1^2\left(\frac{at}{2}\right)$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
31.3	$p\left(\frac{a}{\sqrt{p^2+a^2}}\right)D\left(\frac{a}{\sqrt{p^2+a^2}}\right)$	$\frac{\pi a}{4}\left[J_0^2\left(\frac{at}{2}\right)+J_1^2\left(\frac{at}{2}\right)\right]$
31.4	$\frac{p^2}{p^2-a^2}E\left(\frac{a}{p}\right)$	$\frac{\pi}{2}I_0\left(\frac{at}{2}\right)\left[I_0\left(\frac{at}{2}\right)+atI_1\left(\frac{at}{2}\right)\right]$
31.5	$\frac{ap}{\sqrt{p^2+a^2}}E\left(\frac{a}{\sqrt{p^2+a^2}}\right)$	$\frac{\pi a}{2}J_0\left(\frac{at}{2}\right)\left[J_0\left(\frac{at}{2}\right)-atJ_1\left(\frac{at}{2}\right)\right]$
31.6	$K\left(\frac{\alpha}{p}\right)$	$\frac{\pi}{2}I_0^2\left(\frac{\alpha t}{2}\right)$
31.7	$p\left[K\left(\frac{\alpha}{p}\right)-\frac{\pi}{2}\right]$	$\frac{\pi\alpha}{2}I_0\left(\frac{\alpha t}{2}\right)I_1\left(\frac{\alpha t}{2}\right)$
31.8	$p\left(\frac{a}{\sqrt{p^2+a^2}}\right)K\left(\frac{a}{\sqrt{p^2+a^2}}\right)$	$\frac{\pi a}{2}J_0^2\left(\frac{at}{2}\right)$
31.9	$p^2\left[K\left(\frac{\alpha}{p}\right)-E\left(\frac{\alpha}{p}\right)\right]$	$\frac{\pi\alpha^2}{4}\left[I_0^2\left(\frac{\alpha t}{2}\right)+I_1^2\left(\frac{\alpha t}{2}\right)\right]$
31.10	$\left(p^2-\frac{\alpha^2}{2}\right)K\left(\frac{\alpha}{p}\right)-p^2E\left(\frac{\alpha}{p}\right)$	$\frac{\pi\alpha^2}{4}I_1^2\left(\frac{\alpha t}{2}\right)$
31.11	$\frac{p^2}{p^2-a^2}E\left(\frac{a}{p}\right)-K\left(\frac{a}{p}\right)$	$\frac{\pi a}{2}tI_0\left(\frac{at}{2}\right)I_1\left(\frac{at}{2}\right)$
31.12	$\frac{p^3}{p^2-a^2}E\left(\frac{a}{p}\right)-pK\left(\frac{a}{p}\right)$	$\frac{\pi a^2}{4}t\left[I_0^2\left(\frac{at}{2}\right)+I_1^2\left(\frac{at}{2}\right)\right]$
31.13	$\frac{ap}{\sqrt{p^2+a^2}}\left[K\left(\frac{a}{\sqrt{p^2+a^2}}\right)-E\left(\frac{a}{\sqrt{p^2+a^2}}\right)\right]$	$\frac{\pi a^2}{2}tJ_0\left(\frac{at}{2}\right)J_1\left(\frac{at}{2}\right)$
31.14	$p\left[\frac{p^2+\frac{a^2}{2}}{\sqrt{p^2+a^2}}K\left(\frac{a}{\sqrt{p^2+a^2}}\right)-\sqrt{p^2+a^2}\,E\left(\frac{a}{\sqrt{p^2+a^2}}\right)\right]$	$\frac{\pi a^2}{4}J_1^2\left(\frac{at}{2}\right)$

№	$\bar{f}(p) = p \int_0^\infty e^{-pt} f(t)\, dt$	$f(t)$
31.15	$p \int_p^\infty \frac{d\sigma}{\sqrt{4\sigma^3 - 1}}$	$\frac{1}{3} \sqrt{\frac{\pi}{t}}\, J^{(2)}_{\frac{1}{6},\, -\frac{1}{6}} \left(-\frac{t}{\sqrt[3]{4}} \right)$
31.16	$p \int_p^\infty \frac{\sigma\, d\sigma}{\sqrt{4\sigma^3 - 1}}$	$-\frac{1}{3\sqrt[3]{4}} \sqrt{\frac{\pi}{t}} \times$ $\times J^{(2)}_{-\frac{1}{6},\, -\frac{5}{6}} \left(-\frac{t}{\sqrt[3]{4}} \right)$
31.17	$p \int_{-\alpha}^{\alpha} \frac{\sqrt{\alpha^2 - \sigma^2}}{\sqrt{a^2 + (p + i\sigma)^2}}\, d\sigma$	$\frac{\pi\alpha}{t} J_0(at) J_1(\alpha t)$
31.18	$p \int_{-\alpha}^{\alpha} \frac{d\sigma}{\sqrt{\alpha^2 - \sigma^2}\, \sqrt{a^2 + (p + i\sigma)^2}}$	$\pi J_0(\alpha t) J_0(at)$
31.19	$p \int_0^{\frac{\pi}{2}} \frac{\cos 2n\varphi}{\sqrt{p^2 + a^2 \cos^2 \varphi}}\, d\varphi$	$\frac{(-1)^n \pi}{2} J_n^2 \left(\frac{at}{2} \right)$
31.20	$p \int_{-1}^{1} \frac{(1 - u^2)^{\nu - \frac{1}{2}}\, du}{[b^2 + (p + iau)^2]^{\mu + \frac{1}{2}}} =$ $= p \int_0^{\pi} \frac{\sin^{2\nu} u\, du}{[b^2 + (p + ia \cos u)^2]^{\mu + \frac{1}{2}}}$	$\frac{2^{\mu + \nu} \sqrt{\pi}\, \Gamma\left(\nu + \frac{1}{2} \right)}{a^{\nu} b^{\mu}\, \Gamma(2\mu + 1)} \times$ $\times t^{\mu - \nu} J_\nu(at) J_\mu(bt)$ $\operatorname{Re} \mu > -\frac{1}{2}, \quad \operatorname{Re} \nu > -\frac{1}{2}$
31.21	$p \int_0^{\frac{\pi}{2}} \frac{\sin \varphi\, d\varphi}{\sqrt{p^2 + \sin^2 \varphi}} \times$ $\times \frac{1}{\left(p + \sqrt{p^2 + \sin^2 \varphi} \right)^{\nu + \frac{1}{2}}}$	$\sqrt{\frac{\pi}{2t}}\, \mathbf{H}_\nu(t), \quad \operatorname{Re} \nu > -\frac{3}{2}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
31.22	$p\int\limits_0^{\frac{\pi}{2}}\frac{\sin\varphi d\varphi}{\sqrt{p^2-\sin^2\varphi}}\times$ $\times\frac{1}{(p+\sqrt{p^2-\sin^2\varphi})^{\nu+\frac{1}{2}}}$	$\sqrt{\frac{\pi}{2t}}\,\mathbf{L}_\nu(t),\quad \operatorname{Re}\nu>-\frac{3}{2}$
31.23	$p\int\limits_0^{\frac{\pi}{2}}\frac{\cos^{\mu+\nu}\varphi\cos(\mu-\nu)\varphi}{(p^2+a^2\cos^2\varphi)^{\mu+\nu+\frac{1}{2}}}\,d\varphi$	$\frac{\pi^{\frac{3}{2}}t^{\mu+\nu}}{2(2a)^{\mu+\nu}\Gamma\left(\mu+\nu+\frac{1}{2}\right)}\times$ $\times J_\mu\left(\frac{at}{2}\right)J_\nu\left(\frac{at}{2}\right)$ $\operatorname{Re}(\mu+\nu)>-\frac{1}{2}$
31.24	$p\int\limits_0^{\pi}(1+\cos\varphi)\times$ $\times\left[\sqrt{p^2+2(1-\cos\varphi)}-p\right]d\varphi$	$\frac{2\pi}{t^2}J_1^2(t)$
31.25	$p\int\limits_0^{\pi}\frac{\sin^{2\nu}\varphi d\varphi}{[b^2+(p+ia\cos\varphi)^2]^{\nu+\frac{1}{2}}}$	$\frac{\pi}{(ab)^\nu\Gamma(\nu+1)}J_\nu(at)J_\nu(bt)$ $\operatorname{Re}\nu>-\frac{1}{2}$
31.26	$p^2K\left(\frac{a}{p}\right)-\frac{\pi}{2}p^2$	$\frac{\pi a^2}{4}\left\{\frac{1}{2}\left[I_0\left(\frac{at}{2}\right)\right]^2+\left[I_1\left(\frac{at}{2}\right)\right]^2+\right.$ $\left.+\frac{1}{2}I_0\left(\frac{at}{2}\right)I_2\left(\frac{at}{2}\right)\right\}$
31.27	$\frac{\pi}{2}p^2-p^2E\left(\frac{a}{p}\right)$	$\frac{\pi a}{2}\frac{1}{t}I_0\left(\frac{at}{2}\right)I_1\left(\frac{at}{2}\right)$

§ 32. Тэта-функции

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
32.1	$\vartheta_0(0,p)$	1 при $(2k)^2\pi^2<t<(2k+1)^2\pi^2$ -1 при $(2k+1)^2\pi^2<t<(2k+2)^2\pi^2$, $k=0,\ 1,\ 2,\ \ldots$
32.2	$\vartheta_0(\alpha,p)$	$\frac{1}{\pi}\sum\limits_{k=-\infty}^{\infty}\frac{\sin\left[2\left(\alpha+k+\frac{1}{2}\right)\sqrt{t}\right]}{\alpha+k+\frac{1}{2}}$ $-\frac{1}{2}<\operatorname{Re}\alpha<\frac{1}{2}$
32.3	$\sqrt{p}\,\vartheta_0(\alpha,p)$	$\frac{1}{\sqrt{\pi}}\times$ $\times\sum\limits_{k=-\infty}^{\infty}J_0\left[2\left(\alpha+k+\frac{1}{2}\right)\sqrt{t}\right]$
32.4	$\frac{1}{p^{\nu-1}}\vartheta_0(\alpha,p)$	$\frac{t^{\frac{\nu}{2}-\frac{1}{4}}}{\sqrt{\pi}}\sum\limits_{k=-\infty}^{\infty}\frac{1}{\left(\alpha+k+\frac{1}{2}\right)^{\nu-\frac{1}{2}}}\times$ $\times J_{\nu-\frac{1}{2}}\left[2\left(\alpha+k+\frac{1}{2}\right)\sqrt{t}\right]$ $-\frac{1}{2}<\operatorname{Re}\alpha<\frac{1}{2},\quad \operatorname{Re}\nu\geqslant\frac{1}{2}$
32.5	$\vartheta_1(\alpha,p)$	$\frac{1}{\pi}\sum\limits_{k=-\infty}^{\infty}\frac{(-1)^k}{\alpha+k-\frac{1}{2}}\times$ $\times\sin\left[2\left(\alpha+k-\frac{1}{2}\right)\sqrt{t}\right]$ $-\frac{1}{2}<\operatorname{Re}\alpha<\frac{1}{2}$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
32.6	$\sqrt{p}\,\vartheta_1(\alpha, p)$	$\frac{1}{\sqrt{\pi}}\sum\limits_{k=-\infty}^{\infty}(-1)^k \times$ $\times J_0\left[2\left(\alpha+k-\frac{1}{2}\right)\sqrt{t}\right]$
32.7	$\frac{1}{p^{\nu-1}}\vartheta_1(\alpha, p)$	$\frac{t^{\frac{\nu}{2}-\frac{1}{4}}}{\sqrt{\pi}}\sum\limits_{k=-\infty}^{\infty}\frac{(-1)^k}{\left(\alpha+k-\frac{1}{2}\right)^{\nu-\frac{1}{2}}}\times$ $\times J_{\nu-\frac{1}{2}}\left[2\left(\alpha+k-\frac{1}{2}\right)\sqrt{t}\right]$ $\operatorname{Re}\nu\geqslant\frac{1}{2},\quad -\frac{1}{2}<\operatorname{Re}\alpha<\frac{1}{2}$
32.8	$\vartheta_2(0, p)$	0 при $t<\frac{\pi^2}{4}$ $2\left(\left[\frac{\sqrt{t}}{\pi}-\frac{1}{2}\right]+1\right)$ при $t>\frac{\pi^2}{4}$
32.9	$\vartheta_2(\alpha, p)$	$\frac{1}{\pi}\sum\limits_{k=-\infty}^{\infty}\frac{(-1)^k\sin\left[2(\alpha+k)\sqrt{t}\right]}{\alpha+k}$ $0<\operatorname{Re}\alpha<1$
32.10	$\sqrt{p}\,\vartheta_2(\alpha, p)$	$\frac{1}{\sqrt{\pi}}\sum\limits_{k=-\infty}^{\infty}(-1)^k J_0\left[2(\alpha+k)\sqrt{t}\right]$
32.11	$\frac{1}{p^{\nu-1}}\vartheta_2(\alpha, p)$	$\frac{t^{\frac{\nu}{2}-\frac{1}{4}}}{\sqrt{\pi}}\sum\limits_{k=-\infty}^{\infty}\frac{(-1)^k}{(\alpha+k)^{\nu-\frac{1}{2}}}\times$ $\times J_{\nu-\frac{1}{2}}\left[2(\alpha+k)\sqrt{t}\right]$ $\operatorname{Re}\nu\geqslant\frac{1}{2},\ 0<\operatorname{Re}\alpha<1$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
32.12	$\vartheta_3(0, p)$	$2\left[\frac{\sqrt{t}}{\pi}\right]+1$
32.13	$\vartheta_3(\alpha, p)$	$\frac{1}{\pi}\sum\limits_{k=-\infty}^{\infty}\frac{\sin[2(\alpha+k)\sqrt{t}]}{\alpha+k}$ $0<\operatorname{Re}\alpha<1$
32.14	$\sqrt{p}\,\vartheta_3(\alpha, p)$	$\frac{1}{\sqrt{\pi}}\sum\limits_{k=-\infty}^{\infty}J_0[2(\alpha+k)\sqrt{t}]$
32.15	$\frac{1}{p^{\nu-1}}\vartheta_3(\alpha, p)$	$\frac{t^{\frac{\nu}{2}-\frac{1}{4}}}{\sqrt{\pi}}\sum\limits_{k=-\infty}^{\infty}\frac{1}{(\alpha+k)^{\nu-\frac{1}{2}}}\times$ $\times J_{\nu-\frac{1}{2}}[2(\alpha+k)\sqrt{t}]$ $\operatorname{Re}\nu\geqslant\frac{1}{2},\ 0<\operatorname{Re}\alpha<1$

§ 33. Функции Матье

33.1	$pFek_{2n}\left(\operatorname{Arsh}\frac{p}{2k}, -q\right)$	$(-1)^n\frac{Ce_{2n}\left(\frac{\pi}{2}, q\right)}{\pi A_0^{(2n)}}\times$ $\times\frac{Ce_{2n}(\operatorname{Arch}t, q)}{\sqrt{t^2-1}}$ при $t>1$ 0 при $t<1$
33.2	$pe^p Fek_{2n}\left(\operatorname{Arsh}\frac{p}{2k}, -q\right)$	$(-1)^n\frac{ce_{2n}\left(\frac{\pi}{2}, q\right)}{\pi A_0^{(2n)}}\times$ $\times\frac{Ce_{2n}[\operatorname{Arch}(1+t, q)]}{\sqrt{t^2+2t}}$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
33.3	$pe^p Fek_{2n+1}\left(\operatorname{Arch}\frac{ip}{2k},\ q\right)$	$-\frac{ce'_{2n+1}\left(\frac{\pi}{2},\ q\right)}{\pi k\ {}_1^{(2n+1)}}\times$ $\times\frac{Ce_{2n+1}[\operatorname{Arch}(1+t),\ q]}{\sqrt{t^2+2t}}$
33.4	$\frac{pe^p}{\sqrt{p^2+4k^2}}Fek_{2n+1}\left(\operatorname{Arsh}\frac{p}{2k},\ -q\right)$	$(-1)^n\frac{se_{2n+1}\left(\frac{\pi}{2},\ q\right)}{\pi k B_1^{(2n+1)}}\times$ $\times Se_{2n+1}[\operatorname{Arch}(1+t),\ q]$
33.5	$pGek_{2n+1}\left(\operatorname{Arsh}\frac{p}{2k},\ -q\right)$	$(-1)^{n+1}\frac{ce'_{2n+1}\left(\frac{\pi}{2},\ q\right)}{\pi k A_1^{(2n+1)}}\times$ $\times\frac{Ce_{2n+1}(\operatorname{Arsh}t,\ q)}{\sqrt{t^2-1}}$ при $0<t<1$ 0 при $t>1$
33.6	$pe^p Gek_{2n+1}\left(\operatorname{Arsh}\frac{p}{2k},\ -q\right)$	$(-1)^{n+1}\frac{ce'_{2n+1}\left(\frac{\pi}{2},\ q\right)}{\pi k A_1^{(2n+1)}}\times$ $\times\frac{Ce_{2n+1}[\operatorname{Arch}(1+t),\ q]}{\sqrt{t^2+2t}}$
33.7	$\frac{pe^p}{\sqrt{p^2+4k^2}}Gek_{2n+1}\left(\operatorname{Arch}\frac{ip}{2k},\ q\right)$	$\frac{se_{2n+1}\left(\frac{\pi}{2},\ q\right)}{\pi k B_1^{(2n+1)}}\times$ $\times Se_{2n+1}[\operatorname{Arch}(1+t),\ q]$
33.8	$\frac{pe^p}{\sqrt{p^2+4k^2}}Gek_{2n+2}\left(\operatorname{Arch}\frac{ip}{2k},\ q\right)$	$\frac{se'_{2n+2}\left(\frac{\pi}{2},\ q\right)}{\pi k^2 B_2^{(2n+2)}}\times$ $\times Se_{2n+2}[\operatorname{Arch}(1+t),\ q]$
33.9	$\frac{pe^p}{\sqrt{p^2-4k^2}}Gek_{2n+1}\left(\operatorname{Arch}\frac{p}{2k},\ -q\right)$	$\frac{ce_{2n+1}(0,\ q)}{\pi k A_1^{(2n+1)}}\times$ $\times Se_{2n+1}[\operatorname{Arch}(1+t),\ -q]$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
33.10	$p\int\limits_0^\infty I_p(2k\,\mathrm{sh}\,u)\,Fek_{2n+1}(u,\ -q)\,du$	$\dfrac{Se_{2n+1}(t,q)\,se_{2n+1}\left(\dfrac{\pi}{2},q\right)}{(-1)^n\pi k\,B_1^{(2n+1)}}$
33.11	$p\int\limits_0^\infty I_p(u)\,Fek_{2n+1}\left(\mathrm{Arsh}\,\dfrac{u}{2k},-q\right)\times \dfrac{du}{\sqrt{u^2+4k^2}}$	$\dfrac{Se_{2n+1}(t,q)\,se_{2n+1}\left(\dfrac{\pi}{2},q\right)}{(-1)^n\pi k\,B_1^{(2n+1)}}$
33.12	$p\int\limits_0^\infty I_p(u)\,Fek_{2n}\left(\mathrm{Arsh}\,\dfrac{u}{2k},-q\right)du$	$\dfrac{ce_{2n}\left(\dfrac{\pi}{2},q\right)ce_{2n}(t,q)}{(-1)^n\pi\,A_0^{(2n)}\,\mathrm{sh}\,t}$

§ 34. Гипергеометрические функции. Ряды

34.1	${}_pF_1(\alpha;\ \beta;-p)$	0 при $t>1$ $\dfrac{\Gamma(\beta)}{\Gamma(\alpha)\,\Gamma(\beta-\alpha)}(1-t)^{\beta-\alpha-1}t^{\alpha-1}$ при $t<1$ $\mathrm{Re}\,\beta>\mathrm{Re}\,\alpha>0$
34.2	${}_1F_1\left(\dfrac{1}{2};\ 1;\ -\dfrac{1}{p}\right)$	$J_0^2(\sqrt{t})$
34.3	${}_1F_1\left(1;\ n+1;\ \dfrac{1}{p}\right)$	${}_0F_1(n+1;\ t)$
34.4	$\dfrac{1}{p^\nu}\,{}_1F_1\left(\nu+\dfrac{1}{2};\ 2\nu+1;\ -\dfrac{1}{p}\right)$	$4^\nu\Gamma(\nu+1)\,J_\nu^2(\sqrt{t})$, $\mathrm{Re}\,\nu>-1$
34.5	$\dfrac{1}{p^{\mu-1}}\,{}_1F_1\left(\mu;\ \nu+1;\ -\dfrac{\alpha^2}{4p}\right)$	$\dfrac{\Gamma(\nu+1)}{\Gamma(\mu)}\,t^{\mu-\frac{\nu}{2}-1}J_\nu(\alpha\sqrt{t})$ $\mathrm{Re}\,\mu>0$
34.6	$\dfrac{1}{p^{\nu-\mu-1}}\exp\left(-\dfrac{1}{p}\right){}_1F_1\left(\mu;\ \nu;\ \dfrac{1}{p}\right)$	$\dfrac{\Gamma(\nu)}{\Gamma(\nu-\mu)}\,t^{\frac{\nu-1}{2}-\mu}J_{\nu-1}(2\sqrt{t})$ $\mathrm{Re}\,\nu>\mathrm{Re}\,\mu$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
34.7	$\frac{1}{p^{2\nu+1}}\,{}_1F_1\left(\nu+\frac{1}{2};\ 2\nu+1;\ -\frac{1}{p^2}\right)$	$2^{2\nu+1}J^{(2)}_{2\nu,\,\nu}\left[3\sqrt[3]{\left(\frac{t}{2}\right)^2}\right]$ $\operatorname{Re}\nu>-1$
34.8	$\frac{1}{p^{\mu-1}}\int\limits_0^\pi\exp\left(-\frac{\omega^2}{4p}\right)\times$ $\times\,{}_1F_1\left(1-\mu+\nu;\ \nu+1;\ \frac{\omega^2}{4p}\right)\times$ $\times\sin^{2\nu}\varphi\,d\varphi$	$\frac{\pi\Gamma(2\nu+1)}{(\alpha\beta)^\nu\,\Gamma(\mu)}\,t^{\mu-\nu-1}J_\nu(\alpha\sqrt{t})\times$ $\times J_\nu(\beta\sqrt{t}),\quad\operatorname{Re}\nu>-\frac{1}{2},$ $\operatorname{Re}\mu>0$ $\omega=\sqrt{\alpha^2+\beta^2-2\alpha\beta\cos\varphi}$
34.9	${}_2F_0\left(\alpha,\ \beta;\ \frac{1}{p}\right)$	${}_2F_1(\alpha,\ \beta;\ 1;\ t)$
34.10	$p\,{}_2F_1\left(\beta+\nu+\frac{3}{2},\ \beta-\nu+\frac{3}{2};\right.$ $\left.\beta-\mu+2;\ -\frac{p}{2\alpha}\right)$	$(2\alpha)^{\beta-1}\,t^\beta e^{-\alpha t}W_{\mu,\,\nu}(2\alpha t)$
34.11	$p\,{}_2F_1\left(\alpha+\nu+\frac{3}{2},\ \alpha-\nu+\frac{3}{2};\right.$ $\left.\alpha-\mu+2;\ -p\right)$	$\dfrac{\Gamma(\alpha-\mu+2)\,t^\alpha e^{-\frac{t}{2}}W_{\mu,\,\nu}(t)}{\Gamma\left(\alpha+\nu+\frac{3}{2}\right)\Gamma\left(\alpha-\nu+\frac{3}{2}\right)}$
34.12	$p\,{}_2F_1\left(\alpha,\ \beta;\ \gamma;\ \frac{1}{2}-\frac{p}{\lambda}\right)$	$\frac{\lambda\Gamma(\gamma)}{\Gamma(\alpha)\,\Gamma(\beta)}\,(\lambda t)^{\frac{1}{2}(\alpha+\beta-3)}\times$ $\times W_{\frac{1}{2}(\alpha+\beta+1)-\gamma,\ \frac{1}{2}(\alpha-\beta)}(\lambda t)$ $\operatorname{Re}\alpha>0,\quad\operatorname{Re}\beta>0$
34.13	$\frac{1}{p^{\alpha+\nu+\frac{1}{2}}}\,{}_2F_1\left(\alpha+\nu+\frac{3}{2},\right.$ $\left.-\mu+\nu+\frac{1}{2};\ 2\nu+1;\ \frac{2\alpha}{p}\right)$	$\dfrac{t^\alpha e^{\alpha t}M_{\mu,\,\nu}(2\alpha t)}{(2\alpha)^{\nu+\frac{1}{2}}\,\Gamma\left(\alpha+\nu+\frac{3}{2}\right)}$ $\operatorname{Re}(\alpha+\nu)>-\frac{3}{2}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
34.14	$\frac{1}{p^{\nu-1}}\,{}_2F_1\left(\nu,\ -\mu+\nu-1;\ 2(\nu-1);\ \frac{2\alpha}{p}\right)$	$\frac{e^{\alpha t}M_{\mu,\ \nu-\frac{3}{2}}(2\alpha t)}{(2\alpha)^{\nu-1}\Gamma(\nu)}$, $\operatorname{Re}\nu>0$
34.15	$p^{\frac{1}{2}-\mu-\nu}(1-p)^{\mu-\alpha-1}\times{}_2F_1\left(\mu+\nu+\frac{1}{2},\ \nu-\alpha-\frac{1}{2};\ \mu-\alpha;\ 1-\frac{1}{p}\right)$	$\frac{\Gamma(\mu-\alpha)\,t^{\alpha}e^{\frac{t}{2}}W_{\mu,\nu}(t)}{\Gamma\left(\mu+\nu+\frac{1}{2}\right)\Gamma\left(\mu-\nu+\frac{1}{2}\right)}$ $\mu-\alpha>0$
34.16	$p\left(\frac{1}{2}-p\right)^{-\alpha-\nu-\frac{3}{2}}\times{}_2F_1\left(\alpha+\nu+\frac{3}{2},\ \mu+\nu+\frac{1}{2};\ 2\nu+1;\ \frac{1}{\frac{1}{2}-p}\right)$	$\frac{t^{\alpha}M_{-\mu,\nu}(-t)}{(-1)^{\alpha+2\nu+2}\Gamma\left(\alpha+\nu+\frac{3}{2}\right)}$
34.17	$p\left(\frac{1}{2}-p\right)^{-\alpha+\nu-\frac{3}{2}}\times{}_2F_1\left(\alpha-\nu+\frac{3}{2},\ \mu-\nu+\frac{1}{2};\ 1-2\nu;\ \frac{1}{\frac{1}{2}-p}\right)$	$\frac{t^{\alpha}M_{-\mu,-\nu}(-t)}{(-1)^{\alpha-2\nu+2}\Gamma\left(\alpha-\nu+\frac{3}{2}\right)}$
34.18	$\frac{p}{\left(p+\frac{1}{2}\right)^{\mu+1}}\left(p-\frac{1}{2}\right)^{\mu-\nu-\frac{1}{2}}\times{}_2F_1\left(\nu-\frac{1}{2},\ -\mu+\nu+\frac{1}{2};\ 2\nu+1;\ \frac{1}{\frac{1}{2}-p}\right)=$	$\frac{M_{\mu,\nu}(t)}{\Gamma\left(\nu+\frac{3}{2}\right)}$ $\operatorname{Re}\nu>-\frac{3}{2}$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
	$=\dfrac{p}{\left(p-\frac{1}{2}\right)^{\nu+\frac{3}{2}}}\,{}_2F_1\left(\nu+\frac{3}{2},\ \mu+\nu+\frac{1}{2};\ 2\nu+1;\ \dfrac{1}{\frac{1}{2}-p}\right)=$ $=\dfrac{p}{\left(p+\frac{1}{2}\right)^{\mu+\nu+\frac{1}{2}}}\left(p-\frac{1}{2}\right)^{\mu-1}\times$ $\times\,{}_2F_1\left(\nu-\frac{1}{2},\ \mu+\nu+\frac{1}{2};\ 2\nu+1;\ \dfrac{1}{p+\frac{1}{2}}\right)=$ $=\dfrac{p}{\left(p+\frac{1}{2}\right)^{\nu+\frac{3}{2}}}\,{}_2F_1\left(\nu+\frac{3}{2},\ -\mu+\nu+\frac{1}{2};\ 2\nu+1;\ \dfrac{1}{p+\frac{1}{2}}\right)$	
34.19	$p^{\gamma}(p-1)^n\,{}_2F_1\left[-n,\alpha;\gamma;\dfrac{p}{p-1}\right]$	$\dfrac{n!}{\Gamma(1-\gamma)}\,t^{-\gamma-n}L_n^{(\alpha-\gamma-n)}(t)$ $\operatorname{Re}\gamma<1-n,\quad \operatorname{Re}(\alpha-\gamma)>n-1$
34.20	$p^{m+n+1}(1+p)^{-m-n-2}\times$ $\times\,{}_2F_1\left(-m,\ -n;\ 2;\ \dfrac{1}{p^2}\right)$	$\dfrac{(-1)^{m+n}}{t}\,k_{2m+2}\left(\dfrac{t}{2}\right)k_{2n+2}\left(\dfrac{t}{2}\right)$
34.21	$p(p+1)^{-2\alpha}\times$ $\times\,{}_2F_1\left[-n,\alpha;\frac{1}{2}-\nu;\left(\dfrac{p-1}{p+1}\right)^2\right]$	$\dfrac{(n!)^2\pi\,2^{1-\alpha}}{\Gamma(\alpha)\,\Gamma\left(\frac{1}{2}+n\right)}\,t^{2\alpha-1}\left[L_n^{\left(\alpha-\frac{1}{2}\right)}(t)\right]^2$ $\operatorname{Re}\alpha>0$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
34.22	$\frac{p}{(p^2+\alpha^2)^\lambda}\,{}_2F_1\left(\lambda,\ \mu;\ \lambda+\mu+\frac{1}{2};\ \frac{\alpha^2}{p^2+\alpha^2}\right)$	$\frac{\Gamma\left(\lambda+\mu+\frac{1}{2}\right)}{\Gamma(2\lambda)}\left(\frac{\alpha}{2}\right)^{\frac{1}{2}-\lambda-\mu}\times$ $\times t^{\lambda-\mu-\frac{1}{2}}J_{\lambda+\mu-\frac{1}{2}}(\alpha t)$, $\operatorname{Re}\lambda>0$
34.23	$(p-\alpha)^n(p-\beta)^m p^{-m-n-1}\times$ $\times\,{}_2F_1\left[-m,\ -n;\ -m-n-1;\ \frac{p(p-\alpha-\beta)}{(p-\alpha)(p-\beta)}\right]$	$\frac{(m+1)!\,(n+1)!}{(m+n+1)!}\frac{(-1)^{m+n}}{\alpha\beta t}\times$ $\times\exp\left(\frac{\alpha+\beta}{2}t\right)k_{2n+2}\left(\frac{\alpha t}{2}\right)\times$ $\times k_{2m+2}\left(\frac{\beta t}{2}\right)$
34.24	$(p-\alpha)^n(p-\beta)^m p^{-m-n+\frac{1}{2}}\times$ $\times\,{}_2F_1\left[-m,\ -n;\ -m-n+\frac{1}{2};\ \frac{p(p-\alpha-\beta)}{(p-\alpha)(p-\beta)}\right]$	$\frac{(-2)^{m+n}(m+n)!}{(2m+2n)!\,\sqrt{\pi t}}\exp\left(\frac{\alpha+\beta}{2}t\right)\times$ $\times D_{2n}(\sqrt{2\alpha t})\,D_{2m}(\sqrt{2\beta t})$
34.25	$(p-\alpha)^n(p-\beta)^m p^{-m-n-\frac{1}{2}}\times$ $\times\,{}_2F_1\left[-m,\ -n;\ -m-n-\frac{1}{2};\ \frac{p(p-\alpha-\beta)}{(p-\alpha)(p-\beta)}\right]$	$-\frac{(-2)^{m+n+1}(m+n+1)!}{(2m+2n+2)!\,\sqrt{\pi\alpha\beta t}}\times$ $\times\exp\left(\frac{\alpha+\beta}{2}t\right)D_{2n+1}(\sqrt{2\alpha t})\times$ $\times D_{2m+1}(\sqrt{2\beta t})$
34.26	$(p-\alpha)^n(p-\beta)^m p^{-m-n-\lambda}\times$ $\times\,{}_2F_1\left[-m,\ -n;\ -m-n-\lambda;\ \frac{p(p-\alpha-\beta)}{(p-\alpha)(p-\beta)}\right]$	$\frac{m!\,n!\,t^\lambda}{\Gamma(m+n+\lambda+1)}L_n^{(\lambda)}(\alpha t)\,L_m^{(\lambda)}(\beta t)$ $\operatorname{Re}\lambda>-1$
34.27	$\frac{p^{n+m+1}}{(p+1)^{n+m+\alpha+1}}\,{}_2F_1\left(-m,\ -n;\ \alpha+1;\ \frac{1}{p^2}\right)$	$\frac{n!\,m!\,\Gamma(\alpha+1)}{\Gamma(n+\alpha+1)\,\Gamma(m+\alpha+1)}\times$ $\times e^{-t}t^\alpha L_n^{(\alpha)}(t)\,L_m^{(\alpha)}(t)$, $\operatorname{Re}\alpha>-1$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
34.28	$\frac{1}{p^\nu}\,{}_2F_1\left(\frac{\nu+1}{2},\ \frac{\nu}{2}+1;\ \mu+1;\ \frac{\alpha^2}{p^2}\right)$	$\frac{\Gamma(\mu+1)(2t)^{\nu-\mu}I_\mu(\alpha t)}{\alpha^\mu\Gamma(\nu+1)}$ $\operatorname{Re}\nu>-1,\quad \operatorname{Re}\mu>-1$
34.29	$\frac{1}{p^\nu}\,{}_2F_1\left(\frac{\nu+1}{2},\ \frac{\nu}{2}+1;\ \mu+1;-\frac{\alpha^2}{p^2}\right)$	$\frac{\Gamma(\mu+1)(2t)^{\nu-\mu}J_\mu(\alpha t)}{\alpha^\mu\Gamma(\nu+1)}$ $\operatorname{Re}\nu>-1,\quad \operatorname{Re}\mu>-1$
34.30	$p\mathrm{B}(p,\gamma)\,{}_2F_1(\alpha,\beta;\ \gamma+p;\ z)$	$(1-e^{-t})^{\gamma-1}\,{}_2F_1[\alpha,\beta;\ \gamma;\ z(1-e^{-t})]$, $\operatorname{Re}\gamma>0,\quad \lvert\arg(z-1)\rvert<\pi$
34.31	$\frac{p\Gamma(p)}{\Gamma\left(p+\frac{1}{2}\right)}\,{}_2F_1\left(-\mu-\nu,\ \frac{1}{2}-\mu+\nu;\ p+\frac{1}{2},\ z^2\right)$	$\frac{\Gamma\left(\frac{1}{2}-\mu-\nu\right)\Gamma\left(\frac{1}{2}-\mu+\nu\right)}{2^{2\mu+1}\pi\sqrt{1-e^{-t}}}\times$ $\times(1-z^2+z^2e^{-t})^\mu\times$ $\times\{P_{2\nu}^{2\mu}[z\sqrt{1-e^{-t}}]+$ $+P_{2\nu}^{2\mu}[-z\sqrt{1-e^{-t}}]\},\quad \lvert z\rvert<1$
34.32	$\frac{p\Gamma(p)}{\Gamma\left(p+\frac{3}{2}\right)}\,{}_2F_1\left(\frac{1}{2}-\mu-\nu.\ 1-\mu+\nu;\ p+\frac{3}{2};\ z^2\right)$	$-\frac{\Gamma(-\mu-\nu)\Gamma\left(\frac{1}{2}-\mu+\nu\right)}{4^{\mu+\frac{1}{2}}\pi z}\times$ $\times(1-z^2+z^2e^{-t})^\mu\times$ $\times\{P_{2\nu}^{2\mu}[z\sqrt{1-e^{-t}}]-$ $-P_{2\nu}^{2\mu}[-z\sqrt{1-e^{-t}}]\},\quad \lvert z\rvert<1$
34.33	$p\mathrm{B}(p,\nu)\,{}_2F_1(\alpha,p;\ p+\nu;\ z)$	$(1-e^{-t})^{\nu-1}(1-ze^{-t})^{-\alpha}$ $\operatorname{Re}\nu>0,\quad \lvert\arg(z-1)\rvert<\pi$
34.34	$p\mathrm{B}(\beta;\ p-\beta)\,{}_2F_1(\alpha,\beta;\ p;\ \gamma)$	$e^t(e^t-1)^{\beta-1}\ 1-\gamma(1-e^{-t})]^{-\alpha}$, $\lvert\gamma\rvert<1,\quad \operatorname{Re}\beta>0$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
34.35	$\frac{a^\nu\Gamma(\mu+\nu)\,p\,\mathrm{ctg}\,\nu\pi}{2^\nu\Gamma(1+\nu)\left(\sqrt{p^2+a^2}\right)^{\mu+\nu}}\times$ $\times\,{}_2F_1\left[\frac{\mu+\nu}{2},\ \frac{1-\mu+\nu}{2};\ \nu+1;\ \frac{a^2}{p^2+a^2}\right]-\frac{2^\nu\Gamma(\mu-\nu)\,p\,\mathrm{cosec}\,\nu\pi}{a^\nu\Gamma(1-\nu)\left(\sqrt{p^2+a^2}\right)^{\mu-\nu}}\times$ $\times\,{}_2F_1\left[\frac{\mu-\nu}{2},\ \frac{1-\mu-\nu}{2};\ 1-\nu;\ \frac{a^2}{p^2+a^2}\right]$	$t^{\mu-1}Y_\nu(at)$, $\mathrm{Re}\,\mu>\lvert\mathrm{Re}\,\nu\rvert$, $\mathrm{Re}\,(p-ia)>0$, $\mathrm{Re}\,(p+ia)>0$
34.36	$\frac{1}{p^{\mu-1}}\int_0^\pi {}_2F_1\left(\frac{\mu}{2},\ \frac{\mu+1}{2};\ \nu+1;\ -\frac{\omega^2}{p^2}\right)\sin^{2\nu}\varphi\,d\varphi$	$\frac{\pi\Gamma(2\nu+1)}{(\alpha\beta)^\nu\,\Gamma(\mu)}\,t^{\mu-2\nu-1}J_\nu(\alpha t)\,J_\nu(\beta t)$, $\omega=\sqrt{\alpha^2+\beta^2-2\alpha\beta\cos\varphi}$, $\mathrm{Re}\,\mu>0$
34.37	$\frac{1}{p^\alpha}\,{}_3F_2\left(\frac{\alpha+1}{3},\ \frac{\alpha+2}{3},\ \frac{\alpha+3}{3};\ \mu+1,\ \nu+1;\ -\frac{1}{p^3}\right)$	$\frac{3^{\mu+\nu}\,\Gamma(\mu+1)\,\Gamma(\nu+1)}{\Gamma(\alpha+1)}\,t^{\alpha-\mu-\nu}\times$ $\times\,J^{(2)}_{\mu,\,\nu}(t)$, $\mathrm{Re}\,\alpha>-1$
34.38	$p\mathrm{B}(p,\lambda)\,{}_3F_2(\alpha,\ \beta,\ p;\ \gamma,\ p+\lambda;\ z)$	$(1-e^{-t})^{\lambda-1}\,{}_2F_1(\alpha,\ \beta;\ \gamma;\ ze^{-t})$, $\mathrm{Re}\,\lambda>0$, $\lvert\arg(z-1)\rvert<\pi$
34.39	$p\mathrm{B}(p,\lambda)\,{}_3F_2(\alpha,\ \beta,\ \lambda;\ \gamma,\ p+\lambda;\ z)$	$(1-e^{-t})^{\lambda-1}\,{}_2F_1[\alpha,\ \beta;\ \gamma;\ z(1-e^{-t})]$, $\mathrm{Re}\,\lambda>0$, $\lvert\arg(z-1)\rvert<\pi$
34.40	$\frac{1}{p^{\frac{\lambda+\mu}{2}-1}}\,{}_3F_3\left(\frac{\mu+1}{2},\ \frac{\mu+2}{2},\ \frac{\mu+\lambda}{2};\ \mu-\nu+1,\ \nu+1,\ \mu+1;\ -\frac{\alpha^2}{p}\right)$	$\frac{2^\mu\,\Gamma(\mu-\nu+1)\,\Gamma(\nu+1)}{\alpha^\mu\Gamma\left(\frac{\lambda+\mu}{2}\right)}\times$ $\times\,t^{\frac{\lambda}{2}-1}J_{\mu-\nu}(\alpha\sqrt{t})\,J_\nu(\alpha\sqrt{t})$, $\mathrm{Re}\,(\lambda+\mu)>0$
34.41	$2^{2p+\alpha}\,p\mathrm{B}(p,\ p+\alpha)\times$ $\times\,{}_3F_2(-n,\ n+1,\ p+\alpha;\ 1,\ 2p+\alpha;\ 1)$	$\theta^{-1}[(1-\theta)^\alpha+(-1)^n(1+\theta)^\alpha]\,P_n(\theta)$, $\theta=\sqrt{1-e^{-t}}$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
34.42	${}_mF_n\left(\beta_1,\beta_2,\ldots,\beta_m;\gamma_1,\gamma_2,\ldots\right.$ $\left.\ldots,\gamma_n;\frac{\alpha}{p}\right)$	${}_mF_{n+1}(\beta_1,\beta_2,\ldots,\beta_m;\gamma_1,\gamma_2,\ldots,\gamma_n,$ $1;\ \alpha t),\quad n\geqslant m-1$
34.43	${}_mF_n\left(\beta_1,\ \beta_2,\ \ldots,\ \beta_{m-2},\ \ 1,\frac{1}{2};\right.$ $\left.\gamma_1,\gamma_2,\ldots,\gamma_n;\ \frac{\alpha^2}{p^2}\right)$	${}_{m-2}F_n\left[\beta_1,\beta_2,\ldots,\beta_{m-2};\right.$ $\left.\gamma_1,\gamma_2,\ldots,\gamma_n;\ \left(\frac{\alpha t}{2}\right)^2\right],$ $n\geqslant m-1$
34.44	$\frac{1}{p^\nu}\,{}_{r+n}F_s\left(\alpha_1,\ldots,\alpha_r,\ \ \frac{\nu+1}{n},\ldots\right.$ $\left.\ldots,\frac{\nu+n}{n};\ \gamma_1,\gamma_2,\ldots,\gamma_s;\ \frac{n^n}{p^n}\right)$	$\frac{t^\nu\,{}_rF_s(\alpha_1,\ldots,\alpha_r;\ \gamma_1,\ldots,\gamma_s;\ t^n)}{\Gamma(\nu+1)}$
34.45	$\frac{1}{p^{2\sigma-1}}\,{}_mF_n\left(\alpha_1,\ldots,\alpha_m;\ \gamma_1,\ldots,\gamma_n;\right.$ $\left.\frac{a^2}{p^2}\right)$	$\frac{1}{\Gamma(2\sigma)}\,t^{2\sigma-1}\,{}_mF_{n+2}(\alpha_1,\ldots,\alpha_m;$ $\gamma_1,\ldots,\gamma_n,\sigma,\sigma+\frac{1}{2};\ \left.\frac{a^2t^2}{4}\right),$ $m\leqslant n+1,\quad \operatorname{Re}\sigma>0$
34.46	$\frac{1}{p^{k\sigma-1}}\,{}_mF_n\left(\alpha_1,\ldots,\alpha_m;\ \gamma_1,\ldots,\gamma_n;\right.$ $\left.\frac{a^k}{p^k}\right)$	$\frac{1}{\Gamma(k\sigma)}\,t^{k\sigma-1}\,{}_mF_{n+k}(\alpha_1,\ldots,\alpha_m;$ $\gamma_1,\ldots,\gamma_n,\ \sigma,\sigma+\frac{1}{k},\ldots,$ $\sigma+k-\frac{1}{k};\ \left.\frac{a^kt^k}{k^k}\right),\quad m\leqslant n+1,$ $\operatorname{Re}\sigma>0$
34.47	$\sqrt{p}\,{}_mF_n(\alpha_1,\ldots,\alpha_m;\ \gamma_1,\ldots,\gamma_n;$ $-a\sqrt{p})$	$\frac{1}{\sqrt{\pi t}}\,{}_{2m}F_{2n}\left(\frac{\alpha_1}{2},\ \frac{\alpha_1+1}{2},\ldots,\frac{\alpha_m}{2},\right.$ $\frac{\alpha_m+1}{2};\frac{\gamma_1}{2};\ \frac{\gamma_1+1}{2},\ldots,\frac{\gamma_n}{2},\ \frac{\gamma_n+1}{2};$ $\left.-2^{m-n-2}\frac{a^2}{t}\right),\quad m\leqslant n$
34.48	$p\mathrm{B}(p,\sigma)\times$ $\times\,{}_{m+1}F_{n+1}(\alpha_1,\ldots,\alpha_m\ \ p;\ \gamma_1,\ldots,$ $\gamma_n,\ p+\sigma;\ z)$	$(1-e^{-t})^{\sigma-1}\,{}_mF_n(\alpha_1,\ldots,\alpha_m;$ $\gamma_1,\ldots,\gamma_n;\ \ ze^{-t}),\quad \operatorname{Re}\sigma>0,$ $m\leqslant n+1,\quad \lvert z\rvert<1$ при $m=n+1$

№	$\bar{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
34.49	$pB(p,\sigma)\,{}_{m+1}F_{n+1}(\alpha_1,\ldots,\alpha_m,\sigma;\ \gamma_1,\ldots,\gamma_n,p+\sigma;\ z)$	$(1-e^{-t})^{\sigma-1}\,{}_mF_n[\alpha_1,\ldots,\alpha_m;\ \gamma_1,\ldots,\gamma_n;\ z(1-e^{-t})]$, $\operatorname{Re}\sigma>0,\quad m\leqslant n+1,\quad \lvert z\rvert<1$ при $m=n+1$
34.50	$p\sum_{k=1}^{\infty}\frac{(-1)^{k-1}}{p+k}[\psi(k+1)+C]$	$\frac{\ln(1+e^{-t})}{1+e^{-t}}$
34.51	$p\sum_{k=1}^{\infty}\frac{(-1)^{k-1}}{p+k}\left[1-\frac{1}{2}+\frac{1}{3}-\ldots+\frac{(-1)^{k-1}}{k}\right]$	$-\frac{\ln(1-e^{-t})}{1+e^{-t}}$
34.52	$p\sum_{k=1}^{\infty}\frac{1}{(p+k)^{\nu}}$	$\frac{t^{\nu-1}}{\Gamma(\nu)(e^t-1)},\quad \operatorname{Re}\nu>1$
34.53	$p\sum_{k=1}^{\infty}\frac{(-1)^{k-1}}{(p+k)^{\nu}}$	$\frac{t^{\nu-1}}{\Gamma(\nu)(1+e^t)},\quad \operatorname{Re}\nu>1$
34.54	$p\sum_{k=0}^{\infty}\frac{\alpha^k}{(p+k)^{\nu}}$	$\frac{t^{\nu-1}}{\Gamma(\nu)(1-\alpha e^{-t})},\quad \operatorname{Re}\nu>0,\ \lvert\alpha\rvert<1$
34.55	$p\sum_{k=1}^{\infty}\frac{1}{p^2+4k^2\pi^2}$	$1-2t-2[t]$
34.56	$p^2\sum_{k=1}^{\infty}\frac{(-1)^k}{k(p^2+k^2a^2)}$	$-\ln\left(2\cos\frac{at}{2}\right)$
34.57	$p^2\sum_{k=1}^{\infty}\frac{1}{k(p^2+k^2a^2)}$	$-\ln\left(2\sin\frac{at}{2}\right),\quad a\neq 0$
34.58	$p^2\sum_{k=1}^{\infty}\frac{1}{(2k-1)[p^2+(2k-1)^2a^2]}$	$\frac{1}{2}\ln\operatorname{ctg}\frac{at}{2}$

№	$\bar{f}(p) = p\int\limits_0^\infty e^{-pt} f(t)\,dt$	$f(t)$
34.59	$p\sum\limits_{k=1}^{\infty}\frac{\Lambda(k)}{p^k}$	$\psi(e^t)$
34.60	$p\sum\limits_{k=1}^{\infty}\frac{(2k+1)!\,(4p)^{-k}}{k!\,(k+1)!\,\Gamma(\nu+k+1)}\times$ $\times\frac{1}{\Gamma(2-\nu+k)}$	$\frac{2}{t\sqrt{t}}\left[J_\nu(\sqrt{t})\,J_{1-\nu}(\sqrt{t})-\right.$ $\left.-\frac{\sqrt{t}\sin\nu\pi}{2\nu(1-\nu)\pi}\right]$
34.61	$p\sum\limits_{k=0}^{\infty}\frac{1}{k!\,\Gamma(k-\nu)\,p^{2(\nu+k+1)}}\times$ $\times\frac{(-1)^k\,\Gamma\left(k+\frac{1}{2}\right)}{\Gamma\left(\nu+k+\frac{3}{2}\right)}$	$\pi\left(\frac{t}{2}\right)^{2(\nu+1)} J_{-\nu-1}\left(\frac{t}{2}\right) J_\nu\left(\frac{t}{2}\right)$
34.62	$p\sum\limits_{k=0}^{\infty}\frac{\alpha_{k+1}\,k!}{p(p+1)\ldots(p+k)}=$ $=p\sum\limits_{k=0}^{\infty}\alpha_{k+1}\frac{k!\,\Gamma(p)}{\Gamma(p+k+1)}$	$\sum\limits_{k=0}^{\infty}\alpha_{k+1}(1-e^{-t})^k$
34.63	$\sum\limits_{k=0}^{\infty}\alpha_k e^{-\lambda_k p}$	$\varphi(t)$, где $\varphi(t)=\begin{cases}0 & \text{при } t<\lambda_0\\ \sum\limits_{i=0}^{k}\alpha_i & \text{при } \lambda_k<t<\lambda_{k+1}\end{cases}$ $\lambda_k\to\infty$ при $k\to\infty$, $\int\limits_0^t\varphi(u)\,du=o(e^{ct})$ при $t\to\infty$

№	$\overline{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
34.64	$\sum\limits_{k=0}^{\infty}\alpha_k e^{-\lambda_k p}-\sum\limits_{k=0}^{\infty}\alpha_k$	$\varphi(t)$, где $\varphi(t)=\begin{cases}-\sum\limits_{i=0}^{\infty}\alpha_i & \text{при } t<\lambda_0\\ \sum\limits_{i=k+1}^{\infty}\alpha_i & \text{при } \lambda_k<t<\lambda_{k+1},\end{cases}$ $\int\limits_0^t \varphi(u)\,du=o(e^{\sigma t})$ при $t\to\infty$
34.65	$p\sum\limits_{k=0}^{\infty}\left[\ln(p+k)-\psi(p+k)-\frac{1}{2(p+k)}\right]$	$\frac{1}{1-e^{-t}}\left(\frac{1}{e^t-1}-\frac{1}{t}+\frac{1}{2}\right)$
34.66	$p\sum\limits_{k=0}^{\infty}L_k^{(\alpha-k)}(p)\frac{b^{k+1}}{k+1}$	$(1+t)^\alpha$ при $t<b<1$ 0 при $t>b$
34.67	$p\sum\limits_{k=0}^{\infty}\frac{L_k^{(\alpha)}(p)}{k+1}\left(\frac{b}{1+b}\right)^{k+1}$	$(1+t)^{\alpha-1}$ при $t<b$ 0 при $t>b$
34.68	$p\sum\limits_{k=0}^{\infty}\frac{(-1)^k b^{k+1}p^k L_n^{(\alpha)}\left(-\frac{1}{p}\right)}{(k+1)\,\Gamma(\alpha+k+1)}$	$t^{-\frac{\alpha}{2}}J_\alpha(2\sqrt{t})$ при $t<b$ 0 при $t>b$
34.69	$p\sum\limits_{k=0}^{\infty}\frac{(-1)^k\beta'(k+1)}{k!}p^k$, где $\beta(x)=\sum\limits_{\nu=0}^{\infty}\frac{(-1)^\nu}{x+\nu}=\frac{1}{2}\left[\psi\left(\frac{x+1}{2}\right)-\psi\left(\frac{x}{2}\right)\right]$	$\frac{1}{2}\frac{\ln t}{1+t}$ при $t<1$ 0 при $t>1$

№	$\overline{f}(p)=p\int_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
34.70	$p^{-\lambda-\mu+1}\times$ $\times E(-\nu,\nu+1,\lambda+\mu:\mu+1:2p)$	$-\pi\csc(\nu\pi)\,t^{\lambda+\frac{\mu}{2}-1}\times$ $\times(t+2)^{\frac{\mu}{2}}P_\nu^{-\mu}(t+1)$, $\operatorname{Re}(\lambda+\mu)>0$
34.71	$p^{1-\lambda}E(\mu+\nu+1,\ \mu-\nu,$ $\lambda:\mu+1:2p)$	$2^\mu\Gamma(\mu+\nu+1)\Gamma(\mu-\nu)\,t^{\lambda-\frac{\mu}{2}-1}\times$ $\times(t+2)^{-\frac{\mu}{2}}P_\nu^{-\mu}(t+1)$, $\operatorname{Re}\lambda>0$
34.72	$p^{1-\gamma}E(\alpha,\beta,\gamma:\delta:p)$	$\frac{\Gamma(\alpha)\Gamma(\beta)}{\Gamma(\delta)}t^{\gamma-1}\,{}_2F_1(\alpha,\beta;\delta;-t)$, $\operatorname{Re}\gamma>0$

§ 35. Разные функции

35.1	$\zeta(p)$	$[e^t]$
35.2	$p\zeta(2,p)$	$\frac{1}{1-e^{-t}}$
35.3	$p\zeta(2,p+1)$	$\frac{te^{-t}}{1-e^{-t}}$
35.4	$\zeta(p+a)$	$\sum\limits_{1\leqslant n\leqslant\exp t}n^{-a}$
35.5	$\Gamma(a)\,p^{1-a}\zeta(p)$	$\sum\limits_{1\leqslant n\leqslant\exp t}(t-\ln n)^{a-1}$, $\operatorname{Re}a>0$
35.6	$\frac{\zeta'(p)}{\zeta(p)}$	$-\psi(e^t)$
35.7	$p\,\Gamma(a)\,\zeta(a,bp)$	$\frac{b^{-a}t^{a-1}}{1-\exp\left(-\frac{t}{b}\right)}$, $\operatorname{Re}a>1$, $\operatorname{Re}b>0$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
35.8	$p\zeta(\nu, p)$	$\dfrac{t^{\nu-1}}{\Gamma(\nu)(1-e^{-t})}$, $\quad \operatorname{Re}\nu<1$
35.9	$p\zeta\left(\nu, \dfrac{p+1}{2}\right)$	$\dfrac{(2t)^{\nu-1}}{\Gamma(\nu)\operatorname{sh} t}$, $\quad \operatorname{Re}\nu>1$
35.10	$p\zeta[\nu, \alpha(p+\beta)]$	$\dfrac{t^{\nu-1}e^{-\beta t}}{\alpha^\nu\Gamma(\nu)\left[1-\exp\left(-\dfrac{t}{\alpha}\right)\right]}$
35.11	$p\int\limits_0^\infty \zeta(s+1, p)\,ds$	$\dfrac{\nu(t)}{1-e^{-t}}$
35.12	$(1-2^{2-p})\,\zeta(p-1)$	$\left[\dfrac{e^t+1}{2}\right]$
35.13	$\sqrt{p}\,Q^{1,\nu}(p)$	$\dfrac{\pi}{\sqrt{2}}\sqrt{t}\,I_{\frac{\nu}{2}+\frac{1}{4}}\left(\dfrac{t}{2}\right)I_{\frac{\nu}{2}+\frac{3}{4}}\left(\dfrac{t}{2}\right)$
35.14	$\dfrac{1}{p^{\nu-\frac{3}{2}}}\,Q^{\nu,\,-\nu+\frac{1}{2}}(p)$	$\sqrt{2\pi}\,(4t)^{\nu-1}\operatorname{sh}\left(\dfrac{t}{2}\right)I_{\nu-1}\left(\dfrac{t}{2}\right)$
35.15	$\dfrac{1}{p^{\nu-\frac{3}{2}}}\,Q^{\nu,\,-\nu+\frac{1}{2}}(p)$	$\sqrt{2\pi}\,(4t)^{\nu-1}\operatorname{sh}\left(\dfrac{t}{2}\right)I_{\nu-1}\left(\dfrac{t}{2}\right)$
35.16	$\dfrac{1}{p^{\nu-\frac{3}{2}}}\,Q^{\nu,\,-\nu-\frac{1}{2}}(p)$	$\sqrt{2\pi}\,(4t)^{\nu-1}\operatorname{ch}\left(\dfrac{t}{2}\right)I_{\nu-1}\left(\dfrac{t}{2}\right)$
35.17	$\lambda(p, \alpha)$	$\dfrac{t^\alpha-1}{\ln t}$
35.18	$\lambda(p, \beta)-\lambda(p, \alpha)$	$\dfrac{t^\beta-t^\alpha}{\ln t}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt}f(t)\,dt$	$f(t)$
35.19	$\sqrt{p}\,\lambda(\sqrt{p},\,2\alpha)$	$\frac{2}{\sqrt{\pi t}}\lambda\left(\frac{1}{4t},\,\alpha\right)$
35.20	$\lambda(\sqrt{p},\,2\alpha+1)-\lambda(\sqrt{p},\,1)$	$4\sqrt{\frac{t}{\pi}}\,\lambda\left(\frac{1}{4t},\,\alpha\right)$
35.21	$\lambda(e^p,\,\alpha)$	$\int\limits_0^\alpha e^{-pn}\,\Gamma(n+1)\,dn$
35.22	$p\lambda(e^p,\,\alpha)$	0 при $t>\alpha$ $\Gamma(t+1)$ при $t<\alpha$
35.23	$\nu\left(\frac{1}{p}\right)$	$\int\limits_0^\infty \frac{t^s}{\Gamma^2(s+1)}\,ds$
35.24	$p\nu\left(\frac{1}{p}\right)$	$\int\limits_0^\infty \frac{t^{s-1}}{\Gamma(s)\,\Gamma(s+1)}\,ds$
35.25	$\sqrt{p}\,\nu\left(\frac{1}{p}\right)$	$\frac{\nu(2\sqrt{t})}{2\sqrt{\pi t}}$
35.26	$p\nu(e^{-p})$	$\frac{1}{\Gamma(t+1)}$
35.27	$\sqrt{p}\,\nu\left(\frac{1}{p},\,n\right)$	$\frac{\nu(2\sqrt{t},\,2n)}{2\sqrt{\pi t}}$
35.28	$\frac{1}{\sqrt{p}}\,\nu\left(\frac{1}{p},\,\frac{n-1}{2}\right)$	$\frac{2}{\sqrt{\pi}}\,\nu(2\sqrt{t},\,n)$
35.29	$pe^{pn}\,\nu(e^{-p},\,n)$	$\frac{1}{\Gamma(t+n+1)}$
35.30	$p\,[\nu'(p)-\nu''(p)]$	$\frac{t+1}{(\ln t)^2+\pi^2}$

№	$\bar{f}(p)=p\int\limits_0^\infty e^{-pt} f(t)\,dt$	$f(t)$
35.31	$\mu\left(\frac{1}{p},\ m\right)$	$\int\limits_0^\infty \frac{t^s s^m}{\Gamma^2(s+1)}\,ds$
35.32	$\sqrt{p}\,\mu\left(\frac{1}{p},m\right)$	$\frac{\mu(2\sqrt{t},\ m)}{2^{m+1}\sqrt{\pi t}}$
35.33	$p\mu(e^{-p},\ \alpha)$	$\frac{t^\alpha}{\Gamma(t+1)}$
35.34	$\mu\left(\frac{1}{p},\ m,\ n\right)$	$\int\limits_0^\infty \frac{t^{n+s}s^m}{\Gamma^2(n+s+1)}\,ds$
35.35	$p^n\mu\left(\frac{1}{p},\ m,\ n\right)$	$\int\limits_0^\infty \frac{t^s s^m}{\Gamma(s+1)\,\Gamma(n+s+1)}\,ds$
35.36	$\sqrt{p}\,\mu\left(\frac{1}{p},\ m,\ n\right)$	$\frac{\mu(2\sqrt{t},\ m,\ 2n)}{2^m\sqrt{\pi t}}$
35.37	$pe^{pn}\mu(e^{-p},\ m,\ n)$	$\frac{t^m}{\Gamma(t+n+1)}$
35.38	$\mu\left(\frac{1}{\ln p},\ m,\ n\right)$	$\int\limits_0^\infty \frac{s^m\mu(t,\ n+s-1)}{\Gamma(s+n)\,\Gamma(s+n+1)}\,ds$
35.39	$p\int\limits_{-\alpha}^{\alpha}\frac{du}{\sqrt{a^2+(p+iu)^2}}$	$2\,\frac{\sin\alpha t}{t}\,J_0(at)$
35.40	$p\int\limits_{-\alpha}^{\alpha}\frac{du}{\sqrt{a^2+(p-u)^2}}$	$2\,\frac{\operatorname{sh}\alpha t}{t}\,J_0(at)$
35.41	$\frac{\exp\left(-\frac{\alpha^2+\beta^2}{4p}\right)}{p^\nu}\int\limits_0^\pi \exp\left(\frac{\alpha\beta}{2p}\cos\varphi\right)\times$ $\times\sin^{2\nu}\varphi\,d\varphi$	$\frac{\sqrt{\pi}\,\Gamma\left(\nu+\frac{1}{2}\right)}{\left(\frac{\alpha\beta}{4}\right)^\nu}J_\nu(\alpha\sqrt{t})\times$ $\times J_\nu(\beta\sqrt{t}),\quad \operatorname{Re}\nu>-\frac{1}{2}$

Глава III

ДВУМЕРНОЕ ПРЕОБРАЗОВАНИЕ ЛАПЛАСА — КАРСОНА

§ 36. Основные функциональные соотношения

№	$f(x, y)$	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
36.1	$\frac{1}{(2\pi i)^2}\times \int_{\sigma-i\infty}^{\sigma+i\infty}\int_{\tau-i\infty}^{\tau+i\infty} e^{px+qy}\frac{\bar{f}(p, q)}{pq}\,dp\,dq$	$\bar{f}(p, q)$
36.2	$f(x+a, y),\quad a\geqslant 0$	$e^{pa}\left\{\bar{f}(p, q)-p\int_0^a e^{-p\xi}\times q\int_0^\infty e^{-q\eta}f(\xi, \eta)\,d\eta\,d\xi\right\}$
36.3	$f(x+a, y+b);\quad a, b\geqslant 0$	$e^{pa+qb}\left\{\bar{f}(p, q)-p\int_0^a e^{-p\xi}q\int_0^\infty e^{-q\eta}f(\xi, \eta)\,d\eta\,d\xi-q\int_0^b e^{-q\eta}p\int_0^\infty e^{-p\xi}f(\xi, \eta)\,d\xi\,d\eta+pq\int_0^a\int_0^b e^{-p\xi-q\eta}f(\xi, \eta)\,d\xi\,d\eta\right\}$

№	$f(x, y)$	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
36.4	$\Delta_{a,x} f(x, y) = f(x+a, y) - f(x, y)$	$(e^{ap}-1)\bar{f}(p, q) - pe^{ap}\int_0^a e^{-p\lambda} q \int_0^\infty e^{-q\eta} f(\lambda, \eta)\,d\eta\,d\lambda$
36.5	$\Delta_{a,x}\Delta_{b,y} f(x, y) = f(x+a, y+b) - f(x+a, y) - f(x, y+b) + f(x, y)$	$(e^{ap}-1)(e^{bq}-1)\bar{f}(p, q) - (e^{ap}-1) qe^{bq}\int_0^b e^{-q\mu} p \int_0^\infty e^{-p\xi} \times f(\xi, \mu)\,d\xi\,d\mu - (e^{bq}-1) pe^{ap} \times \int_0^a e^{-p\lambda} q \int_0^\infty e^{-q\eta} f(\lambda, \eta)\,d\eta\,d\lambda + pqe^{ap+bq}\int_0^a\int_0^b e^{-p\lambda-q\mu} f(\lambda, \mu)\,d\lambda\,d\mu$
36.6	$e^{-ax-by} f(x, y)$	$\frac{p}{p+a}\frac{q}{q+b}\bar{f}(p+a, q+b)$
36.7	$\frac{1}{a} e^{-\frac{c}{a}x} f\left(\frac{x}{a}\right)$ при $y > \frac{b}{a}x$; 0 при $y < \frac{b}{a}x$	$\frac{p\bar{f}(ap+bq+c)}{ap+bq+c}$
36.8	$(-x)^n f(x, y)$	$pq\frac{\partial^n}{\partial p^n}\left[\frac{\bar{f}(p, q)}{pq}\right]$
36.9	$xy f(x, y)$	$pq\frac{\partial^2}{\partial p\,\partial q}\left[\frac{\bar{f}(p, q)}{pq}\right]$
36.10	$(-x)^m(-y)^n f(x, y)$	$pq\frac{\partial^{m+n}}{\partial p^m\,\partial q^n}\left[\frac{\bar{f}(p, q)}{pq}\right]$
36.11	$-x\frac{\partial f(x, y)}{\partial x}$	$p\frac{\partial\bar{f}(p, q)}{\partial p}$
36.12	$xy\frac{\partial^2 f(x, y)}{\partial x\,\partial y}$	$pq\frac{\partial^2\bar{f}(p, q)}{\partial p\,\partial q}$

№	$f(x, y)$	$\overline{f}(p, q)= pq\int\limits_0^\infty\int\limits_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
36.13	$(-x)^m(-y)^n\dfrac{\partial^2 f(x, y)}{\partial x\,\partial y}$	$pq\dfrac{\partial^{m+n}}{\partial p^m\,\partial q^n}\overline{f}(p, q)$
36.14	$\dfrac{\partial^{r+s-2}}{\partial x^{r-1}\,\partial y^{s-1}}\left[(-x)^m(-y)^n\dfrac{\partial^2 f(x,y)}{\partial x\,\partial y}\right]$ r, s, m, n — целые положительные числа; $m \geqslant r$, $n \geqslant s$	$p^r q^s\dfrac{\partial^{m+n}\overline{f}(p, q)}{\partial p^m\,\partial q^n}$
36.15	$(-x)^r(-y)^s\dfrac{\partial^{m+n} f(x, y)}{\partial x^m\,\partial y^n}$ r, s, m, n — целые положительные числа; $r \geqslant m$, $s \geqslant n$	$pq\dfrac{\partial^{r+s}}{\partial p^r\,\partial q^s}[p^{m-1}q^{n-1}\overline{f}(p, q)]$
36.16	$\dfrac{\partial^n}{\partial x^n} f(x, y)$ * $(n \geqslant 1)$	$p^n\overline{f}(p, q)-\sum\limits_{k=0}^{n-1} p^{n-k}\overline{f}_{2,\,x^k}(0, q)$
36.17	$\dfrac{\partial^n}{\partial y^n} f(x, y)$ $(n \geqslant 1)$	$q^n\overline{f}(p, q)-\sum\limits_{k=0}^{n-1} q^{n-k}\overline{f}_{1,\,y^k}(p, 0)$
36.18	$\dfrac{\partial^{m+n}}{\partial x^m\,\partial y^n} f(x, y)$ $(m,\ n \geqslant 1)$	$p^m q^n\overline{f}(p, q)-$ $-p^m\sum\limits_{l=0}^{n-1} q^{n-l}\overline{f}_{1,\,y^l}(p, 0)-$ $-q^n\sum\limits_{k=0}^{m-1} p^{m-k}\overline{f}_{2,\,x^k}(0, q)+$ $+\sum\limits_{k=0}^{m-1}\sum\limits_{l=0}^{n-1} p^{m-k}q^{n-l} f^{(k+l)}_{x^k y^l}(0, 0)$

* Начиная с формулы 36.16 и далее, будем пользоваться следующими обозначениями:

$$\overline{f}_1(p, y)=p\int\limits_0^\infty e^{-p\xi} f(\xi, y)\,d\xi,\quad \overline{f}_2(x, q)=q\int\limits_0^\infty e^{-q\eta} f(x, \eta)\,d\eta$$

$$\overline{f}_{1,\,y^l}(p, 0)=p\int\limits_0^\infty e^{-p\xi}\left.\frac{\partial^l f(\xi, y)}{\partial y^l}\right|_{y=0} d\xi,\quad \overline{f}_{2,\,x^k}(0, q)=q\int\limits_0^\infty e^{-q\eta}\left.\frac{\partial^k f(x, \eta)}{\partial x^k}\right|_{x=0} d\eta$$

№	$f(x, y)$	$\bar f(p, q) = pq\int\limits_0^\infty\int\limits_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
36.19	$\int\limits_0^x f(\xi)\,d\xi + \int\limits_0^y f(\eta)\,d\eta + \int\limits_0^{x+y} f(\xi)\,d\xi$	$\frac{\bar f(p) - \bar f(q)}{p-q}$
36.20	$\int\limits_x^\infty \frac{f(\xi, y)}{\xi}\,d\xi$	$\int\limits_0^p \frac{\bar f(\lambda, q)}{\lambda}\,d\lambda$
36.21	$\int\limits_x^\infty\int\limits_y^\infty \frac{f(\xi, \eta)}{\xi\eta}\,d\xi\,d\eta$	$\int\limits_0^p\int\limits_0^q \frac{\bar f(\lambda, \mu)}{\lambda\mu}\,d\lambda\,d\mu$
36.22	$\int\limits_0^\infty \frac{f(\xi, y)}{\xi}\,d\xi$	$\int\limits_0^\infty \frac{\bar f(\lambda, q)}{\lambda}\,d\lambda$
36.23	$\int\limits_0^\infty\int\limits_0^\infty \frac{f(\xi, \eta)}{\xi\eta}\,d\xi\,d\eta$	$\int\limits_0^\infty\int\limits_0^\infty \frac{\bar f(\lambda, \mu)}{\lambda\mu}\,d\lambda\,d\mu$
36.24	$\int\limits_0^x\int\limits_0^y f_1(\xi, \eta) f_2(x-\xi, y-\eta)\,d\xi\,d\eta$	$\frac{1}{pq}\bar f_1(p, q)\bar f_2(p, q)$
36.25	$f(x+y)$	$-\frac{q\bar f(p) - p\bar f(q)}{p-q}$
36.26	$f'(x+y)$	$pq\left\{-\frac{\bar f(p) - \bar f(q)}{p-q}\right\}$
36.27	$f''(x+y)$	$pq\left\{-\frac{p\bar f(p) - q\bar f(q)}{p-q} + f(0)\right\}$
36.28	$f^{(n)}(x+y)$	$pq\left\{-\frac{p^{n-1}\bar f(p) - q^{n-1}\bar f(q)}{p-q}\right\} +$ $+ pq\{[p^{n-2} + p^{n-3}q + \ldots + pq^{n-3} +$ $+ q^{n-2}] f(0) + [p^{n-3} + p^{n-4}q + \ldots$ $\ldots + pq^{n-4} + q^{n-3}] f'(0) +$ $+ [p^{n-4} + p^{n-5}q + \ldots + pq^{n-5} +$ $+ q^{n-4}] f''(0) + \ldots$ $\ldots + (p+q) f^{n-3}(0) + f^{n-2}(0)\}$

№	$f(x, y)$	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
36.29	$f(x^2, y)$	$\frac{p}{2}\int_0^\infty \chi(p, \lambda)\bar{f}(\lambda, q)\frac{d\lambda}{\lambda}$
36.30	$f(x^2, y^2)$	$\frac{pq}{4}\int_0^\infty\int_0^\infty \chi(p, \lambda)\chi(q, \mu)\frac{\bar{f}(\lambda, \mu)}{\lambda\mu}d\lambda\,d\mu$
36.31	$xf(x^2, y)$	$\frac{p}{2}\int_0^\infty \psi(p, \lambda)\frac{\bar{f}(\lambda, q)}{\lambda}d\lambda$
36.32	$xy\,f(x^2, y^2)$	$\frac{pq}{4}\int_0^\infty\int_0^\infty \psi(p, \lambda)\psi(q, \mu)\frac{\bar{f}(\lambda, \mu)}{\lambda\mu}d\lambda\,d\mu$
36.33	$f\left(\frac{1}{x}, y\right)$	$\int_0^\infty \left(\frac{p}{\lambda}\right)^{\frac{1}{2}} J_1(2\sqrt{p\lambda})\bar{f}(\lambda, q)\,d\lambda$
36.34	$f\left(\frac{1}{x}, \frac{1}{y}\right)$	$\sqrt{pq}\int_0^\infty\int_0^\infty (\lambda\mu)^{-\frac{1}{2}} J_1(2\sqrt{p\lambda}) \times$ $\times J_1(2\sqrt{q\mu})\bar{f}(\lambda, \mu)\,d\lambda\,d\mu$
36.35	$\frac{1}{x}f\left(\frac{1}{x}, y\right)$	$p\int_0^\infty J_0(2\sqrt{p\lambda})\bar{f}(\lambda, q)\frac{d\lambda}{\lambda}$
36.36	$x^{\alpha-1}f\left(\frac{1}{x}, y\right)$	$p^{1-\frac{\alpha}{2}}\int_0^\infty \lambda^{\frac{\alpha}{2}-1} J_\alpha(2\sqrt{p\lambda})\bar{f}(\lambda, q)\,d\lambda$
36.37	$\frac{1}{xy}f\left(\frac{1}{x}, \frac{1}{y}\right)$	$pq\int_0^\infty\int_0^\infty J_0(2\sqrt{p\lambda})J_0(2\sqrt{q\mu}) \times$ $\times \bar{f}(\lambda, \mu)\frac{d\lambda\,d\mu}{\lambda\mu}$

№	$f(x, y)$	$\bar{f}(p, q) = pq \int_0^\infty \int_0^\infty e^{-px-qy} f(x, y)\, dx\, dy$
36.38	$x^{\alpha-1} y^{\beta-1} f\left(\frac{1}{x}, \frac{1}{y}\right)$	$\int_0^\infty \int_0^\infty \left(\frac{\lambda}{p}\right)^{\frac{\alpha}{2}-1} \left(\frac{\mu}{q}\right)^{\frac{\beta}{2}-1} \times J_\alpha(2\sqrt{p\lambda})\, J_\beta(2\sqrt{q\mu}) \times \bar{f}(\lambda, \mu)\, d\lambda\, d\mu$
36.39	$\sqrt{xy}\, f\left(\frac{1}{x}, \frac{1}{y}\right)$	$\frac{1}{\pi} \int_0^\infty \int_0^\infty \left(\frac{\sin 2\sqrt{p\lambda}}{2\sqrt{p}} - \sqrt{\lambda} \cos 2\sqrt{p\lambda}\right) \times \left(\frac{\sin 2\sqrt{q\mu}}{2\sqrt{q}} - \sqrt{\mu} \cos 2\sqrt{q\mu}\right) \times \bar{f}(\lambda, \mu) \frac{d\lambda\, d\mu}{\lambda\mu}$
36.40	$\frac{f(x, y)}{x+1}$	$p \int_p^\infty e^{-(\lambda-p)} \bar{f}(\lambda, q) \frac{d\lambda}{\lambda}$
36.41	$\frac{f(x, y)}{x}$	$p \int_p^\infty \frac{\bar{f}(\lambda, q)}{\lambda}\, d\lambda$
36.42	$\frac{f(x, y)}{xy}$	$pq \int_p^\infty \int_q^\infty \frac{\bar{f}(\lambda, \mu)}{\lambda\mu}\, d\lambda\, d\mu$
36.43	$f(x^2 + y^2)$	$\frac{pq}{\pi} \int_0^\infty \int_0^\infty \exp\left[-\frac{p^2\lambda^2}{4} - \frac{q^2\mu^2}{4}\right] \times \frac{\lambda^2 \bar{f}\left(\frac{1}{\lambda^2}\right) - \mu^2 \bar{f}\left(\frac{1}{\mu^2}\right)}{\lambda^2 - \mu^2}\, d\lambda\, d\mu$

№	$f(x, y)$	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
36.44	$f(\sqrt{x^2+y^2})$	$-pq\int_0^{\frac{\pi}{2}} \bar{\Phi}'(p\cos\theta+q\sin\theta)\,d\theta$ *
36.45	$\frac{f(\sqrt{x^2+y^2})}{\sqrt{x^2+y^2}}$	$pq\int_0^{\frac{\pi}{2}} \bar{\Phi}(p\cos\theta+q\sin\theta)\,d\theta$
36.46	$e^{-a\sqrt{x^2+y^2}}\frac{f(\sqrt{x^2+y^2})}{\sqrt{x^2+y^2}}$	$pq\int_0^{\frac{\pi}{2}} \bar{\Phi}(p\cos\theta+q\sin\theta+a)\,d\theta$
36.47	$f\left(\frac{y}{x}\right)$	$pq\int_0^{\frac{\pi}{2}} \frac{\bar{\Phi}(\mathrm{tg}\,\theta)}{(p\cos\theta+q\sin\theta)^2}\,d\theta$
36.48	$\frac{f\left(\frac{y}{x}\right)}{\sqrt{x^2+y^2}}$	$pq\int_0^{\frac{\pi}{2}} \frac{\bar{\Phi}(\mathrm{tg}\,\theta)}{p\cos\theta+q\sin\theta}\,d\theta$
36.49	$J_0(2\sqrt{xy})\,f(x)$	$\frac{pq}{pq+1}\bar{f}\left(p+\frac{1}{q}\right)$
36.50	$\chi(x, y)\,f(x)$	$\frac{p\sqrt{q}}{p+\sqrt{q}}\bar{f}(p+\sqrt{q})$
36.51	$J_0[2\sqrt{a(y-x)x}]\,f(x)$ при $y > x$ 0 при $y < x$	$\frac{pq\bar{f}\left(p+q+\frac{a}{q}\right)}{pq+q^2+a}$

* Функция $\bar{\Phi}(p) = \frac{\bar{f}(p)}{p}$, где $\bar{f}(p) = p\int_0^\infty e^{-px} f(x)\,dx$.

При этом $-p\bar{\Phi}'(p) = p\int_0^\infty e^{-px} x f(x)\,dx$

§ 37. Рациональные и иррациональные функции

№	$f(x, y)$	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
37.1	1	1
37.2	$x^m y^n$	$\frac{m!\,n!}{p^m q^n}$
37.3	$x^{\mu-1} y^{\nu-1}$; $\operatorname{Re}\mu,\ \nu > 0$	$\frac{\Gamma(\mu)\,\Gamma(\nu)}{p^{\mu-1} q^{\nu-1}}$
37.4	$-\frac{1}{2}$ при $x < y < 2x$ $\frac{1}{2}$ при $0 < y < x$	$\frac{q^2}{(p+q)(p+2q)}$
37.5	-1 при $y > a - x$ 0 при $y < a - x$ $(a \geqslant 0)$	$\frac{qe^{-ap} - pe^{-aq}}{p-q}$
37.6	-1 при $1 - x < y < 1$ 0 в остальных случаях	$\frac{q(e^{-p} - e^{-q})}{p-q}$
37.7	1 при $y > 1$ и $x > 1$ x при $y > 1$ и $x < 1$ y при $y < 1$ и $x > 1$ $x + y - 1$ при $1 - x < y < 1$ и $x < 1$ 0 при $y < 1 - x$	$-\frac{e^{-p} - e^{-q}}{p-q}$
37.8	$1 - x - y$ при $1 - x < y < 1$ 0 в остальных случаях	$\frac{q}{p}\left(\frac{e^{-p} - e^{-q}}{p-q}\right)$
37.9	xy при $y > x$ 0 при $y < x$	$\frac{p}{q(p+q)^2} + \frac{2p}{(p+q)^3}$
37.10	$x(y - ax)$ при $y > ax$ 0 при $y < ax$ $a \geqslant 0$	$\frac{p}{q(p+aq)^2}$
37.11	$x^2 y - \frac{x^3}{3}$ при $y > x$ $xy^2 - \frac{y^3}{3}$ при $y < x$	$\frac{2}{pq(p+q)}$

№	$f(x, y)$	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
37.12	x при $y > \frac{x^2}{2}$ 0 при $y < \frac{x^2}{2}$	$\frac{p}{q} \exp\left(\frac{p^2}{4q}\right) D_{-2}\left(\frac{p}{\sqrt{q}}\right)$
37.13	$x^{\nu-1}$ при $y > \frac{x^2}{2}$ 0 при $y < \frac{x^2}{2}$, $\operatorname{Re}\nu > 0$	$\Gamma(\nu)\frac{p}{q^{\frac{\nu}{2}}} \exp\left(\frac{p^2}{4q}\right) D_{-\nu}\left(\frac{p}{\sqrt{q}}\right)$
37.14	$x^3y^2 - \frac{x^4y}{2} + \frac{x^5}{10}$ при $y > x$ $x^2y^3 - \frac{xy^4}{2} + \frac{y^5}{10}$ при $y < x$	$\frac{12}{p^2q^2(p+q)}$
37.15	$(x+y)^m$	$\frac{m!}{p^mq^n}\left(\frac{q^{m+1}-p^{m+1}}{q-p}\right)$
37.16	0 при $y > x$ $(x-y)^{\nu-1}$ при $y < x$ $\operatorname{Re}\nu > 0$	$\frac{\Gamma(\nu)}{p^{\nu-1}}\left(\frac{q}{p+q}\right)$
37.17	$x^{\nu-1}$ при $y > x$ 0 при $y < x$ $\operatorname{Re}\nu > 0$	$\frac{\Gamma(\nu)\,p}{(p+q)^\nu}$
37.18	x^ν при $y > x$ y^ν при $y < x$ $\operatorname{Re}\nu > -1$	$\frac{\Gamma(\nu+1)}{(p+q)^\nu}$
37.19	y^ν при $y > x$ x^ν при $y < x$ $\operatorname{Re}\nu > -1$	$\Gamma(\nu+1)\left[\frac{1}{p^\nu} - \frac{1}{(p+q)^\nu} + \frac{1}{q^\nu}\right]$
37.20	$x^{-\nu-1}$ при $y > \frac{1}{4x}$ 0 при $y < \frac{1}{4x}$	$\frac{2^{\nu+1}p^{\frac{\nu}{2}+1}}{q^{\frac{\nu}{2}-1}} K_\nu(\sqrt{pq})$

№	$f(x, y)$	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
37.21	0 при $y > \frac{1}{x}$; $\frac{1}{\sqrt{y}}$ при $y < \frac{1}{x}$	$2\sqrt{\pi q}\, e^{-\sqrt{pq}} \operatorname{sh} \sqrt{pq}$
37.22	$\frac{1}{\sqrt{x}}$ при $y > 2\sqrt{x}$; 0 при $y < 2\sqrt{x}$	$\sqrt{\pi p} \exp\left(\frac{q^2}{p}\right) \operatorname{erfc}\left(\frac{q}{\sqrt{p}}\right)$
37.23	1 при $y > \frac{x^2}{4}$; 0 при $y < \frac{x^2}{4}$	$p\sqrt{\frac{\pi}{q}} \exp\left(\frac{p^2}{q}\right) \operatorname{erfc}\left(\frac{p}{\sqrt{q}}\right)$
37.24	$\frac{(y+\sqrt{y^2-x^2})^\nu + (y-\sqrt{y^2-x^2})^\nu}{x^\nu \sqrt{y^2-x^2}}$ при $y > x$; 0 при $y < x$; $\lvert \operatorname{Re} \nu \rvert < 1$	$\frac{\pi pq}{\sin(\nu\pi)} \times \frac{[(p+\sqrt{p^2-q^2})^\nu - (p-\sqrt{p^2-q^2})^\nu]}{q^\nu \sqrt{p^2-q^2}}$
37.25	$\frac{1}{y}$ при $y > x$; 0 при $y < x$	$q \ln\left(1 + \frac{p}{q}\right)$
37.26	$y - \frac{x^2}{4}$ при $y > \frac{x^2}{4}$; 0 при $y < \frac{x^2}{4}$	$\sqrt{\frac{\pi}{q}}\, \frac{p}{q} \exp\left(\frac{p^2}{q}\right) \operatorname{erfc}\left(\frac{p}{\sqrt{q}}\right)$
37.27	$\frac{2}{\sqrt{4xy-1}}$ при $y > \frac{1}{4x}$; 0 при $y < \frac{1}{4x}$	$\pi\sqrt{pq}\, e^{-\sqrt{pq}}$
37.28	$y^{-\frac{3}{2}}$ при $y > \frac{1}{4x}$; 0 при $y < \frac{1}{4x}$	$2\sqrt{\frac{\pi}{p}}\, q e^{-\sqrt{pq}}$

№	$f(x, y)$	$\bar{f}(p, q) = pq \int_0^\infty \int_0^\infty e^{-px-qy} f(x, y)\, dx\, dy$
37.29	$x^{-\frac{1}{2}}$ при $y > \frac{1}{4x}$ 0 при $y < \frac{1}{4x}$	$\sqrt{\pi p}\, e^{-\sqrt{pq}}$
37.30	$y^{-\frac{3}{2}}\left(x - \frac{1}{4y}\right)^{\nu - \frac{3}{2}}$ при $y > \frac{1}{4x}$ 0 при $y < \frac{1}{4x}$ $\operatorname{Re}\nu > \frac{1}{2}$	$\frac{2\sqrt{\pi}\,\Gamma\left(\nu - \frac{1}{2}\right) q e^{-\sqrt{pq}}}{p^{\nu-1}}$
37.31	$y^{-\frac{1}{2}}\left(x - \frac{1}{4y}\right)^{\nu-1}$ при $y > \frac{1}{4x}$ 0 при $y < \frac{1}{4x}$ $\operatorname{Re}\nu > 0$	$\frac{\Gamma(\nu)\sqrt{\pi q}\, e^{-\sqrt{pq}}}{p^{\nu-1}}$
37.32	$\frac{1}{\sqrt{xy}}$	$\pi\sqrt{pq}$
37.33	$\sqrt{\frac{x}{y}}\left(\frac{1}{x+y}\right)$	$\frac{\pi pq}{\sqrt{p}(\sqrt{p} + \sqrt{q})}$
37.34	$\frac{1}{\sqrt{y}} - \frac{1}{\sqrt{x+y}}$	$\frac{\sqrt{\pi q}}{\sqrt{p} + \sqrt{q}}$
37.35	$\frac{1}{\sqrt{x+y}}$	$\frac{\sqrt{\pi pq}}{\sqrt{p} + \sqrt{q}}$
37.36	$x(x+y)^{-\frac{3}{2}}$	$\frac{q\sqrt{\pi p}}{(\sqrt{p} + \sqrt{q})^2}$
37.37	$\sqrt{x+y} - \sqrt{y}$	$\frac{\sqrt{\pi}}{2\sqrt{pq}}\left(\frac{q}{\sqrt{p} + \sqrt{q}}\right)$
37.38	$xy(x+y)^{-\frac{3}{2}}$	$\frac{\sqrt{\pi pq}}{(\sqrt{p} + \sqrt{q})^3}$

№	$f(x, y)$	$\bar{f}(p, q)= =pq\int\limits_0^\infty\int\limits_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
37.39	$x(x+y)^{-\frac{1}{2}}$	$\sqrt{\frac{\pi q}{p}}\,\frac{\sqrt{p}+\frac{\sqrt{q}}{2}}{(\sqrt{p}+\sqrt{q})^2}$
37.40	$\frac{\sqrt{xy}}{x+y}$	$\frac{\pi\sqrt{pq}}{2(\sqrt{p}+\sqrt{q})^2}$
37.41	$x^\nu+y^\nu, \quad \operatorname{Re}\nu>-1$	$\Gamma(\nu+1)\,\frac{p^\nu+q^\nu}{(pq)^\nu}$
37.42	$(x+y)^{\nu-1}, \quad \operatorname{Re}\nu>0$	$\Gamma(\nu)\,\frac{p^\nu-q^\nu}{p^{\nu-1}q^{\nu-1}(p-q)}$
37.43	$(xy)^{\frac{\nu}{2}}(x+y)^{-\frac{\nu+1}{2}}$	$\Gamma\left(\frac{\nu}{2}+1\right)\frac{\sqrt{\pi pq}}{(\sqrt{p}+\sqrt{q})^{\nu+1}}$
37.44	$\frac{1}{x+y}$	$\frac{pq}{p-q}\ln\frac{q}{p}$
37.45	$\frac{1}{\sqrt{x^2+y^2}}$	$\frac{pq}{\sqrt{p^2+q^2}}\ln\frac{p+q+\sqrt{p^2+q^2}}{p+q-\sqrt{p^2+q^2}}$
37.46	$\frac{(xy)^{-\frac{1}{2}}}{1+4xy}$	$\frac{\pi^2}{2}pq\,[\mathbf{H}_0(\sqrt{pq})-Y_0(\sqrt{pq})]$
37.47	$(xy+1)^{-\frac{3}{2}}$	$\frac{8pq}{\pi}\{\cos(2\sqrt{pq})\operatorname{ci}(2\sqrt{pq})-$ $-\sin(2\sqrt{pq})\operatorname{si}(2\sqrt{pq})\}$
37.48	$\frac{(\sqrt{x^2+y^2}-y)^{\frac{1}{2}}}{\sqrt{x^2+y^2}}$	$\frac{q\sqrt{\pi p}}{p+\sqrt{2pq}+q}$
37.49	$\frac{(\sqrt{x^2+2(a-1)xy+y^2}-(a-1)x-y)^{\frac{1}{2}}}{\sqrt{x^2+2(a-1)xy+y^2}}$ $a\geqslant 0$	$\frac{q\sqrt{(2-a)\pi p}}{p+\sqrt{2apq}+q}$

№	$f(x, y)$	$\bar{f}(p, q) = pq\int\limits_0^\infty\int\limits_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
37.50	$(x+\sqrt{x^2+y^2})^{\frac{1}{2}}$	$\frac{\sqrt{\pi}}{2\sqrt{pq}}\left\{\sqrt{2q}+\frac{p\sqrt{p}}{p+\sqrt{2pq}+q}\right\}$
37.51	$(\sqrt{x^2+y^2}-x)^{\frac{1}{2}}$	$\frac{\sqrt{\pi}}{2}\sqrt{\frac{p}{q}}\left(\frac{\sqrt{p}+\sqrt{2q}}{p+\sqrt{2pq}+q}\right)$
37.52	$(\sqrt{x^2+y^2}+x)^{\frac{1}{2}}-\sqrt{y}$	$\frac{\sqrt{\pi}}{2}\sqrt{\frac{q}{p}}\left(\frac{\sqrt{p}+\sqrt{2q}}{p+\sqrt{2pq}+q}\right)$
37.53	$\sqrt{y}-(\sqrt{x^2+y^2}-x)^{\frac{1}{2}}$	$\frac{\sqrt{\pi}}{2}\left(\frac{\sqrt{q})}{p+\sqrt{2pq}+q}\right)$
37.54	$(y+\sqrt{x^2+y^2})^{\frac{1}{2}}-\sqrt{2y}$	$\frac{\sqrt{\pi}}{2\sqrt{p}}\left(\frac{q}{p+\sqrt{2pq}+q}\right)$
37.55	$\sqrt{y}\left(1-\sqrt{\frac{y}{x+y}}\right)$	$\frac{\sqrt{\pi}}{2}\frac{\sqrt{q}}{(\sqrt{p}+\sqrt{q})^2}$
37.56	$\frac{x+2y}{\sqrt{x+y}}-2\sqrt{y}$	$\frac{\sqrt{\pi}}{2}\frac{q}{\sqrt{p}(\sqrt{p}+\sqrt{q})^2}$
37.57	$\frac{1}{\sqrt{y}}-\frac{(x+\sqrt{x^2+y^2})^{\frac{1}{2}}}{\sqrt{x^2+y^2}}$	$\frac{q\sqrt{\pi q}}{p+\sqrt{2pq}+q}$
37.58	$\frac{(x+\sqrt{x^2+y^2})^{\frac{1}{2}}}{\sqrt{x^2+y^2}}$	$\frac{\sqrt{\pi pq}(\sqrt{p}+\sqrt{2q})}{p+\sqrt{2pq}+q}$
37.59	$\frac{1}{\sqrt{(x+y)}}-\frac{x}{2(x+y)^{\frac{3}{2}}}$	$\frac{\sqrt{\pi pq}\left(\sqrt{p}+\frac{\sqrt{q}}{2}\right)}{(\sqrt{p}+\sqrt{q})^2}$
37.60	$\frac{x^a y^b}{(x+y)^c}$, $a>-1$, $b>-1$, $c<a+b+2$	$\frac{\Gamma(a+1)\Gamma(b+1)\Gamma(a+b+2-c)}{\Gamma(a+b+2)q^{b-c}p^a}\times$ $\times {}_2F_1\left(c,\ a+1;\ a+b+2;\ \frac{p-q}{p}\right)$

§ 38. Показательные и логарифмические функции

№	$f(x, y)$	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\, dx\, dy$
38.1	e^{ax+by}	$\dfrac{pq}{(p-a)(q-b)}$
38.2	0 при $y>x$ e^{by} при $y<x$	$\dfrac{q}{p+q-b}$
38.3	0 при $y>x$ e^{ax} при $y<x$	$\dfrac{pq}{(p-a)(p+q-a)}$
38.4	e^{x} при $y>x$ e^{y} при $y<x$	$\dfrac{p+q}{p+q-1}$
38.5	e^{y} при $y>x$ e^{x} при $y<x$	$\dfrac{pq(p+q-2)}{(p-1)(q-1)(p+q-1)}$
38.6	e^{ax} при $y>x$ e^{by} при $y<x$	$\dfrac{(p+q)^2-bp-aq}{(p+q-a)(p+q-b)}$
38.7	e^{by} при $y>x$ e^{ax} при $y<x$	$\dfrac{pq\,[(p+q)^2-(2a+b)p-}{(p-a)(q-b)(p+q-a)(p+q-b)}-$ $-\dfrac{(2b+a)q+a^2+b^2]}{(p-a)(q-b)(p+q-a)(p+q-b)}$
38.8	$e^{by}(2e^{ax}-1)$ при $y>\frac{a}{b}x$ $e^{ax}(2e^{by}-1)$ при $y<\frac{a}{b}x$	$\dfrac{pq(bp+aq)}{(p-a)(q-b)(bp+aq-ab)}$ $\frac{a}{b}\geqslant 0$
38.9	$e^{y}(e^{x}-1)$ при $y>x$ $e^{x}(e^{y}-1)$ при $y<x$	$\dfrac{pq}{(p-1)(q-1)(p+q-1)}$
38.10	$1-e^{-ax}$ при $y>x$ $1-e^{-ay}$ при $y<x$ $a\neq 0$	$\dfrac{a}{(p+q+a)}$
38.11	$e^{a(x-1)}$ при $2-x<y<2$ 0 в остальных случаях	$\dfrac{2pq\,e^{-(p+q)}\,\mathrm{sh}\,(p-q-a)}{(p-a)(p-q-a)}$
38.12	$e^{a(y-1)}$ при $2-x<y<2$ 0 в остальных случаях	$\dfrac{2qe^{-(p+q)}\,\mathrm{sh}\,(p-q+a)}{p-q+a}$

№	$f(x, y)$	$\bar{f}(p, q) = pq \int_0^\infty \int_0^\infty e^{-px-qy} f(x, y)\, dx\, dy$
38.13	e^{xy}	$pq\, e^{-pq} \operatorname{Ei}(pq)$
38.14	e^{-xy}	$-pq\, e^{pq} \operatorname{Ei}(-pq)$
38.15	$x^{\mu-1} y^{\nu-1} e^{ax+by}$ $\operatorname{Re}\mu,\ \nu > 0$	$\dfrac{\Gamma(\mu)\Gamma(\nu)\, pq}{(p-a)^{\mu}(q-b)^{\nu}}$
38.16	$-e^{ax+by}$ при $1-x<y<1$ 0 в остальных случаях	$\dfrac{pq\,[e^{-(p-a)}-e^{-(q-b)}]}{(p-a)\,[(p-a)-(q-b)]}$
38.17	$x^{\nu-1} e^{-xy}$, $\operatorname{Re}\nu > 0$	$\dfrac{\Gamma(\nu)\, q}{p^{\nu-2}} S(\nu, pq)$
38.18	$y^{\nu-1} e^{-xy}$, $\operatorname{Re}\nu > 0$	$\Gamma(\nu)\, p^{\nu} q\, e^{pq} Q(pq, 1-\nu)$
38.19	$x(y-x)^{-\frac{3}{2}} e^{-\frac{x^2}{4(y-x)}}$ при $y > x$ 0 при $y < x$	$\dfrac{2\sqrt{\pi}\, pq}{p+\sqrt{q}+q}$
38.20	$x(y-ax)^{-\frac{3}{2}} e^{-\frac{a}{c}(y-ax)} e^{-\frac{cx^2}{4(y-ax)}}$ при $y > ax$ 0 при $y < ax$ $a \geqslant 0,\ c > 0$	$2\sqrt{\dfrac{\pi}{c}}\left(\dfrac{pq}{p+aq+\sqrt{cq+a}}\right)$, $a \geqslant 0,\ c > 0$
38.21	$e^{-xy-x-y}$	$pq\, e^{(p+1)(q+1)} \operatorname{Ei}\{(p+1)(q+1)\}$
38.22	$e^{-\frac{y}{x}}$	$e^{\frac{p}{2q}} W_{-1, \frac{1}{2}}\left(\dfrac{p}{q}\right)$
38.23	$(xy)^{-\frac{1}{2}} e^{-\frac{y}{x}}$	$\pi\sqrt{pq}\, e^{\frac{p}{q}} \operatorname{erfc}\left(\sqrt{\dfrac{p}{q}}\right)$
38.24	$e^{-\frac{x}{y}} - 1$	$\dfrac{q}{p} e^{\frac{q}{p}} \operatorname{Ei}\left(-\dfrac{q}{p}\right)$
38.25	$\dfrac{1}{y} e^{-\frac{x}{y}}$	$-q e^{\frac{q}{p}} \operatorname{Ei}\left(-\dfrac{q}{p}\right)$

№	$f(x, y)$	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
38.26	e^{-x^2y}	$p\sqrt{q}\,[\sin(p\sqrt{q})\operatorname{Ci}(p\sqrt{q}) - \cos(p\sqrt{q})\operatorname{si}(p\sqrt{q})]$
38.27	$e^{-\frac{1}{xy^2}}$	$4q\sqrt{p}\,K_1\left[(2q\sqrt{p})^{\frac{1}{2}} e^{\frac{i\pi}{4}}\right] \times K_1\left[(2q\sqrt{p})^{\frac{1}{2}} e^{-\frac{i\pi}{4}}\right]$
38.28	xe^{-xy^2}	$-pq\,[\cos(p\sqrt{q})\operatorname{Ci}(p\sqrt{q}) + \sin(p\sqrt{q})\operatorname{si}(p\sqrt{q})]$
38.29	$x^{2m}e^{-xy^2}, \quad -\frac{1}{2} < m < 0$	$\sqrt{\pi}\,\Gamma(-2m)\,\Gamma(1+2m)\,2^{-2m-\frac{3}{2}} \times p^{\frac{1}{2}\left(\frac{3}{2}-2m\right)} q^{\frac{3}{2}+2m} \times \left[\mathbf{H}_{-2m-\frac{1}{2}}(q\sqrt{p}) - Y_{-2m-\frac{1}{2}}(q\sqrt{p})\right]$
38.30	$\frac{1}{xy} e^{-\frac{1}{xy^2}}$	$4pq\,K_0\left[(2q\sqrt{p})^{\frac{1}{2}} e^{\frac{\pi i}{4}}\right] \times K_0\left[(2q\sqrt{p})^{\frac{1}{2}} e^{-\frac{\pi i}{4}}\right]$
38.31	$\frac{e^{-\frac{1}{xy^2}}}{x^{2m+1}y^{2m+1}}$	$4p^{m+1}q\,K_{2m}\left[(2q\sqrt{p})^{\frac{1}{2}} e^{\frac{\pi i}{4}}\right] \times K_{2m}\left[(2q\sqrt{p})^{\frac{1}{2}} e^{-\frac{\pi i}{4}}\right]$
38.32	$xy^{-\frac{3}{2}} e^{-\frac{\alpha^2x^2}{4y}}, \quad \lvert\arg\alpha\rvert \leqslant \frac{\pi}{4},\ \alpha \neq 0$	$\frac{2\sqrt{\pi}}{\alpha}\left(\frac{pq}{p+\alpha\sqrt{q}}\right)$
38.33	$\frac{e^{-\frac{\alpha^2x^2}{4y}}}{\sqrt{y}}, \quad \lvert\arg\alpha\rvert \leqslant \frac{\pi}{4}$	$\frac{p\sqrt{\pi q}}{p+\alpha\sqrt{q}}$

№	$f(x, y)$	$\bar f(p, q) = pq \int_0^\infty \int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
38.34	$(xy)^{-\frac{1}{2}} e^{-\frac{x^2}{4y}}$	$\dfrac{\pi p \sqrt{q}}{(p+\sqrt{q})^{\frac{1}{2}}}$
38.35	$(xy)^{-\frac{1}{2}} e^{-\frac{1}{xy^2}}$	$\pi \sqrt{2pq}\, e^{-2\sqrt{q\sqrt{p}}}$
38.36	$\dfrac{x^\nu}{y^{\nu+1}} e^{-\frac{x^2}{4y}}, \quad \lvert \operatorname{Re} \nu \rvert < 1$	$\dfrac{2^{\nu+1}\pi}{\sin(\nu\pi)} \dfrac{pq^{\frac{\nu}{2}+1}}{\sqrt{p^2-q}} \times$ $\times \operatorname{sh}\left(\nu \operatorname{Arch} \dfrac{p}{\sqrt{q}}\right)$
38.37	$\dfrac{(1-e^{ax})}{x\sqrt{y}} e^{-\frac{x^2}{4y}}$	$p\sqrt{\pi q} \ln \dfrac{p+\sqrt{q}-a}{p+\sqrt{q}}$
38.38	$(y-x)^{-\frac{1}{2}} e^{-\frac{x^2}{4(y-x)}}$ при $y > x$ 0 при $y < x$	$\dfrac{p\sqrt{\pi q}}{p+q+\sqrt{q}}$
38.39	$(xy)^{-\frac{1}{2}} e^{-\frac{xy}{x+y}}$	$\dfrac{\pi\sqrt{pq}(\sqrt{p}+\sqrt{q})}{[1+(\sqrt{p}+\sqrt{q})^2]^{\frac{1}{2}}}$
38.40	$\dfrac{\sqrt{xy}}{x+y} e^{-\frac{xy}{x+y}}$	$\dfrac{\pi\sqrt{pq}(\sqrt{p}+\sqrt{q})}{2[(\sqrt{p}+\sqrt{q})^2+1]^{\frac{3}{2}}}$
38.41	$\dfrac{\sqrt{xy}}{x+y} e^{\frac{xy}{x+y}}$	$\dfrac{\pi}{2(p+2\sqrt{pq}+q+1)^{\frac{3}{2}}}$
38.42	$\dfrac{1}{\sqrt{x^2+y^2}} e^{-a\sqrt{x^2+y^2}}$	$\dfrac{pq}{\sqrt{p^2+q^2-a^2}} \times$ $\times \ln \dfrac{p+q+a+\sqrt{p^2+q^2-a^2}}{p+q+a-\sqrt{p^2+q^2-a^2}}$
38.43	$\Gamma'(1) - \ln x$ при $y > x$ $\Gamma'(1) - \ln y$ при $y < x$	$\ln(p+q)$

№	$f(x, y)$	$\overline{f}(p, q) = pq \int\limits_0^\infty \int\limits_0^\infty e^{-px-qy} f(x, y)\, dx\, dy$
38.44	$2\Gamma'(1) - \ln(xy)$	$\ln pq$
38.45	$\Gamma'(1) - \ln x$ при $y > x$ 0 при $y < x$	$\dfrac{p \ln(p+q)}{p+q}$
38.46	$\ln(x+y) - \Gamma'(1)$	$\dfrac{q \ln p - p \ln q}{p-q}$
38.47	$\ln \sqrt{x^2+y^2}$	$\Gamma'(1) - \ln p + \dfrac{p^2 \ln \frac{p}{q} + pq \frac{\pi}{2}}{p^2+q^2}$
38.48	$\ln \left[1 + \left(\dfrac{y}{x}\right)^2\right]^{\frac{1}{2}}$	$\dfrac{p^2 \ln \frac{p}{q} + \frac{\pi}{2} pq}{p^2+q^2}$
38.49	$\dfrac{y^x - y^a}{\ln y}$ при $x > a > 0$ 0 при $x < a$	$\lambda(qe^p, a)$
38.50	$\dfrac{(xy)^a - 1}{\ln xy}$	$\int\limits_0^a \dfrac{\Gamma^2(s+1)}{(pq)^s}\, ds$

§ 39. Тригонометрические и гиперболические функции. Обратные тригонометрические и обратные гиперболические функции

39.1	$\sin x$ при $n\pi - x < y < n\pi$ 0 в остальных случаях	$\dfrac{pq(q-2p)\left[(-1)^n e^{-n\pi p} - e^{-n\pi q}\right]}{(p^2+1)\left[(p-q)^2+1\right]}$
39.2	$\sin y$ при $n\pi - x < y < n\pi$ 0 в остальных случаях	$\dfrac{q\left[e^{-n\pi p} - (-1)^n e^{-n\pi q}\right]}{(p-q)^2+1}$
39.3	$\cos x$ при $n\pi - x < y < n\pi$ 0 в остальных случаях	$\dfrac{pq(1+pq-p^2)\left[(-1)^n e^{-n\pi p} - e^{-n\pi q}\right]}{(p^2+1)\left[(p-q)^2+1\right]}$
39.4	$\cos y$ при $n\pi - x < y < n\pi$ 0 в остальных случаях	$\dfrac{q(q-p)\left[e^{-n\pi p} - (-1)^n e^{-n\pi q}\right]}{(p-q)^2+1}$

№	$f(x, y)$	$\bar{f}(p, q) = pq \int_0^\infty \int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
39.5	$\sin y$ при $\left(n+\frac{1}{2}\right)\pi - x < y < \left(n+\frac{1}{2}\right)\pi$; 0 в остальных случаях	$\frac{q\left[e^{-\left(n+\frac{1}{2}\right)\pi p}\right.}{(p-q)^2+1} - \frac{\left.(-1)^n (q-p) e^{-\left(n+\frac{1}{2}\right)\pi q}\right]}{(p-q)^2+1}$
39.6	$\sin x$ при $\left(n+\frac{1}{2}\right)\pi - x < y < \left(n+\frac{1}{2}\right)\pi$; 0 в остальных случаях	$\frac{pq(-1)^n(1+pq-p^2)e^{-\left(n+\frac{1}{2}\right)\pi p}}{(p^2+1)[(p-q)^2+1]} - \frac{pq(q-2p)e^{-\left(n+\frac{1}{2}\right)\pi q}}{(p^2+1)[(p-q)^2+1]}$
39.7	$\cos y$ при $\left(n+\frac{1}{2}\right)\pi - x < y < \left(n+\frac{1}{2}\right)\pi$; 0 в остальных случаях	$\frac{q(q-p)e^{-\left(n+\frac{1}{2}\right)\pi p}}{(p-q)^2+1} + \frac{(-1)^n q e^{-\left(n+\frac{1}{2}\right)\pi q}}{(p-q)^2+1}$
39.8	$\cos x$ при $\left(n+\frac{1}{2}\right)\pi - x < y < \left(n+\frac{1}{2}\right)\pi$; 0 в остальных случаях	$\frac{(-1)^n pq(2p-q)e^{-\left(n+\frac{1}{2}\right)\pi p}}{(p^2+1)[(p-q)^2+1]} - \frac{pq(1+pq-p^2)e^{-\left(n+\frac{1}{2}\right)\pi q}}{(p^2+1)[(p-q)^2+1]}$
39.9	$\sin(x+y)$	$\frac{pq(p+q)}{(p^2+1)(q^2+1)}$
39.10	$\cos(x+y)$	$\frac{pq(pq-1)}{(p^2+1)(q^2+1)}$
39.11	$\frac{1}{\sqrt{x}}\cos(2\sqrt{axy})$	$\frac{pq\sqrt{\pi p}}{pq+a}$

№	$f(x, y)$	$\bar{f}(p, q) = pq \int_0^\infty \int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
39.12	$\frac{1}{\sqrt{xy}} \cos(2\sqrt{axy})$	$\frac{\pi pq}{\sqrt{pq+a}}$
39.13	$\frac{1}{y} \sin(2\sqrt{axy})$	$\pi\sqrt{a}\left(\frac{q}{\sqrt{pq+a}}\right)$
39.14	$\frac{1}{\sqrt{y}} \sin(2\sqrt{axy})$	$\frac{q\sqrt{a\pi p}}{pq+a}$
39.15	$\frac{1}{\sqrt{x+y}} \sin\frac{xy}{x+y}$	$\frac{\sqrt{\pi pq}(\sqrt{p}+\sqrt{q})}{(\sqrt{p}+\sqrt{q})^4+1}$
39.16	$\frac{1}{\sqrt{x+y}} \cos\frac{xy}{x+y}$	$\frac{\sqrt{\pi pq}(\sqrt{p}+\sqrt{q})^3}{(\sqrt{p}+\sqrt{q})^4+1}$
39.17	$x^n \sin\sqrt{xy}$	$\frac{\pi\Gamma(2n+2)\,pq^{n+1}}{\Gamma(n+1)(4pq+1)^{n+\frac{3}{2}}}$
39.18	$\frac{x^n \cos\sqrt{xy}}{\sqrt{xy}}$	$\frac{2\pi\Gamma(2n+1)\,pq^{n+1}}{\Gamma(n+1)(4pq+1)^{n+\frac{1}{2}}}$
39.19	$\frac{\sin(x\sqrt{y})}{\sqrt{y}}$	$-pq\,e^{p^2q}\,\mathrm{Ei}(-p^2q)$
39.20	$\cos(x\sqrt{y})$	$-p^2q\,e^{p^2q}\,\mathrm{Ei}(-p^2q)$
39.21	$\cos(xy)$	$pq[\sin(pq)\,\mathrm{Ci}(pq) - \cos(pq)\,\mathrm{si}(pq)]$
39.22	$\sin(y\sqrt{x})$	$\sqrt{\pi p}\,q\exp\left(\frac{pq^2}{2}\right)D_{-2}(q\sqrt{2p})$
39.23	$y^{n-1}\sin(y\sqrt{2x})$	$\sqrt{\frac{\pi}{2}}\,\Gamma(n+1)\,qp^{\frac{n}{2}}\exp\left(\frac{pq^2}{4}\right) \times$ $\times D_{-(n+1)}(q\sqrt{p})$
39.24	$\sin(x\sqrt{y})$	$p\sqrt{\pi q} - \pi p^2 q\exp(p^2q)\,\mathrm{erfc}(p\sqrt{q})$

№	$f(x, y)$	$\bar{f}(p, q) = pq \int\limits_0^\infty \int\limits_0^\infty e^{-px-qy} f(x, y)\, dx\, dy$
39.25	$\dfrac{\sin(x\sqrt{y})}{y}$	$\pi q e^{p^2 q} \operatorname{erfc}(p\sqrt{q})$
39.26	$\dfrac{\cos(x\sqrt{y})}{\sqrt{y}}$	$\pi p q\, e^{p^2 q} \operatorname{erfc}(p\sqrt{q})$
39.27	$\dfrac{\sin(x\sqrt{x})}{\sqrt{y}}$	$-pqe^{p^2q} \operatorname{Ei}(-p^2q)$
39.28	$\sin(2\sqrt{axy}$	$\dfrac{\pi\sqrt{a}}{2} \dfrac{pq}{(pq+a)^{\frac{3}{2}}}$
39.29	$\operatorname{sh}(x+y)$	$\dfrac{pq(p+q)}{(p^2-1)(q^2-1)}$
39.30	$\operatorname{ch}(x+y)$	$\dfrac{pq(pq+1)}{(p^2-1)(q^2-1)}$
39.31	$e^y \operatorname{sh} x$ при $y > x$ $e^x \operatorname{sh} y$ при $y < x$	$\dfrac{pq}{(p+q)(p-1)(q-1)}$
39.32	$\dfrac{\operatorname{sh}(a\sqrt{x^2+y^2})}{\sqrt{x^2+y^2}}$	$\dfrac{pq}{2\sqrt{p^2+q^2-a^2}} \times$ $\times \ln \dfrac{pq - a\sqrt{p^2+q^2-a^2}}{pq + a\sqrt{p^2+q^2-a^2}}$
39.33	$\dfrac{\operatorname{ch}(a\sqrt{x^2+y^2})}{\sqrt{x^2+y^2}}$	$\dfrac{pq}{2\sqrt{p^2+q^2-a^2}} \times$ $\times \ln \dfrac{p^2+pq+q^2+(p+q)\sqrt{p^2+q^2-a^2}-a^2}{p^2+pq+q^2-(p+q)\sqrt{p^2+q^2-a^2}-a^2}$
39.34	$\operatorname{arctg} \dfrac{y}{x}$	$\dfrac{pq \ln \dfrac{q}{p} + \dfrac{\pi}{2} p^2}{p^2+q^2}$
39.35	$\operatorname{arctg} \sqrt{\dfrac{y}{x}}$	$\dfrac{\pi}{2}\left(\dfrac{p}{p+\sqrt{pq}}\right)$

№	$f(x, y)$	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
39.36	$\sqrt{\frac{x}{y}} - \operatorname{arctg}\sqrt{\frac{x}{y}}$	$\frac{\pi}{2}\left(\frac{q}{p+\sqrt{pq}}\right)$
39.37	$\frac{\operatorname{ch}\left[\nu \operatorname{Arch}\frac{y}{x}\right]}{\sqrt{y^2-x^2}}$ при $y > x$ 0 при $y < x$ $\lvert \operatorname{Re}\nu \rvert < 1$	$\frac{\pi}{\sin(\nu\pi)}\frac{pq}{\sqrt{p^2-q^2}}\operatorname{sh}\left(\nu \operatorname{Arch}\frac{p}{q}\right)$
39.38	$\operatorname{Arsh}\frac{x}{y}$	$\frac{q}{\sqrt{p^2+q^2}}\ln\frac{p+q+\sqrt{p^2+q^2}}{p+q-\sqrt{p^2+q^2}}$

§ 40. Цилиндрические функции

40.1	$J_0(2\sqrt{axy})$	$\frac{pq}{pq+a}$
40.2	$I_0(2\sqrt{axy})$	$\frac{pq}{p^2q^2-a}$
40.3	$e^{bx+ay}J_0(2\sqrt{(c-ab)xy})$	$\frac{pq}{pq-ap-bq+c}$
40.4	$x^{m-\frac{n}{2}}y^{\frac{n}{2}}J_n(2\sqrt{xy})$	$\frac{\Gamma(m+1)\,pq^{m-n+1}}{(pq+1)^{m+1}}$
40.5	$J_0(2\sqrt{x})$ при $y > x$ $J_0(2\sqrt{y})$ при $y < x$	$e^{-\frac{1}{p+q}}$
40.6	$J_0(y\sqrt{2x})$	$q\sqrt{p}\exp\left(\frac{pq^2}{4}\right)D_{-1}(q\sqrt{p})$
40.7	$J_0(x\sqrt{y})$	$p\sqrt{\pi q}\exp(p^2q)\operatorname{erfc}(p\sqrt{q})$
40.8	$J_0(xy)$	$\frac{\pi}{2}pq\,[\mathbf{H}_0(pq) - Y_0(pq)]$
40.9	$J_0\left(\sqrt{\frac{x}{y}}\right)$	$\sqrt{\frac{q}{p}}K_1\left(\sqrt{\frac{q}{p}}\right)$

№	$f(x, y)$	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
40.10	$\frac{1}{\sqrt{xy}} I_0\left(\frac{1}{2\sqrt{xy}}\right)$	$\sqrt{\pi pq}\, I_0(2\sqrt[4]{pq})$
40.11	$J_0(2\sqrt{x+y})$	$\frac{pe^{-\frac{1}{q}} - qe^{-\frac{1}{p}}}{p-q}$
40.12	$[J_0(\sqrt{xy})]^2$	$\sqrt{\frac{pq}{pq+1}}$
40.13	$J_0(k\sqrt{x^2+y^2})$	$\frac{pq}{(p^2+q^2+k^2)}\left[\frac{p}{\sqrt{p^2+k^2}} + \frac{q}{\sqrt{p^2+k^2}}\right]$
40.14	$y^{\nu-1} J_0(2\sqrt{axy})$, $\operatorname{Re}\nu > 0$	$\frac{\Gamma(\nu)\, p^\nu q}{(pq+a)^\nu}$
40.15	$\frac{e^{-ax}}{\sqrt{x}} J_0(2\sqrt{xy})$	$\frac{p\sqrt{\pi q}}{\sqrt{pq+aq+1}}$
40.16	$yJ_0(\sqrt{y^2-x^2})$ при $y > x$ 0 при $y < x$	$\frac{pq^2(p+2\sqrt{q^2+1})}{(q^2+1)^{\frac{3}{2}}(p+\sqrt{q^2+1})^2}$
40.17	$J_0(x+y)$	$\frac{pq(p+q)}{\sqrt{p^2+1}\sqrt{q^2+1}(\sqrt{p^2+1}+\sqrt{q^2+1})}$
40.18	$\int_0^x J_0(\xi)\,d\xi$ при $y > x$ $\int_0^y J_0(\eta)\,d\eta$ при $y < x$	$\frac{1}{\sqrt{(p+q)^2+1}}$
40.19	$\int_0^x J_0(\xi)\,d\xi$ при $y > x$ 0 при $y < x$	$\frac{p}{(p+q)\sqrt{(p+q)^2+1}}$
40.20	$e^{x+y} J_0(2i\sqrt{xy})$	$\left(1-\frac{1}{p}-\frac{1}{q}\right)^{-1}$

№	$f(x, y)$	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
40.21	$Y_0(\lvert a\rvert\sqrt{x^2+y^2})$ a—действительное число	$\frac{4p^2q^2}{p^2+q^2+a^2}$
40.22	$\frac{1}{\sqrt{x}} J_1(2\sqrt{x})$ при $y > x$ 0 при $y < x$	$p\left[1-\exp\left(-\frac{1}{p+q}\right)\right]$
40.23	$\frac{1}{\sqrt{x+y}} J_1(2\sqrt{x+y})$	$\frac{pq\left(e^{-\frac{1}{p}}-e^{-\frac{1}{q}}\right)}{p-q}$
40.24	$J_0(2\sqrt{xy})\, I_1(2\sqrt{xy})$	$\frac{pq\,[\sqrt{p^2q^2+1}-pq]}{\sqrt{p^2q^2+1}}$
40.25	$J_1(x+y)$	$\frac{pq}{\sqrt{p^2+1}\sqrt{q^2+1}} \times \left(\frac{p+q}{p\sqrt{q^2+1}+q\sqrt{p^2+1}}\right)$
40.26	$\frac{y}{\sqrt{y^2-x^2}} J_1(\sqrt{y^2-x^2})$ при $y > x$ 0 при $y < x$	$-\frac{pq\,(pq-p\sqrt{q^2+1}-1)}{(p+q)\sqrt{q^2+1}\,(p+\sqrt{q^2+1})}$
40.27	$\frac{x}{\sqrt{y^2+2xy}} J_1(\sqrt{y^2+2xy})$	$-\frac{q\,(q-\sqrt{q^2+1})}{p-q+\sqrt{q^2+1}}$
40.28	$\sqrt{\frac{x}{y}}\, J_1(2\sqrt{axy})$ $a \neq 0$	$\frac{\sqrt{a}\,q}{pq+a}$
40.29	$\frac{x+y}{\sqrt{xy}} J_1(2\sqrt{axy})$	$\sqrt{a}\left(\frac{p+q}{pq+a}\right)$
40.30	$J_1\left(\frac{x}{y}\right)$	$\frac{\pi}{2}\frac{q}{p}\left[\mathbf{H}_1\left(\frac{q}{p}\right)-Y_1\left(\frac{q}{p}\right)-\frac{2}{\pi}\right]$
40.31	$\sqrt{x}\, J_1(y\sqrt{2x})$	$2^{-\frac{1}{2}}\, q\exp\left(\frac{pq^2}{4}\right) D_{-2}(q\sqrt{p})$

№	$f(x, y)$	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
40.32	$\frac{1}{y} K_1\left(\frac{x}{y}\right)$	$\frac{\pi^2}{2} q\left[\mathbf{H}_1\left(\sqrt{\frac{q}{p}}\right) - Y_1\left(\frac{q}{p}\right)\right] - \pi q$
40.33	$\left(\frac{x}{y}\right)^{\frac{\nu}{2}} J_\nu(2\sqrt{axy}),\quad \operatorname{Re}\nu > -1$	$\frac{a^{\frac{\nu}{2}} q}{p^{\nu-1}(pq+a)}$
40.34	$(xy)^{\frac{\nu-1}{2}} J_{\nu-1}(2\sqrt{axy}),\quad \operatorname{Re}\nu > 0$	$\frac{a^{\frac{\nu-1}{2}}\Gamma(\nu)\,pq}{(pq+a)^\nu}$
40.35	$(xy)^{\frac{\nu-1}{2}}[J_{\nu-1}(2\sqrt{xy}) + I_{\nu-1}(2\sqrt{xy})],\quad \operatorname{Re}\nu > 0$	$\frac{\Gamma(\nu)\,pq}{(p^2q^2-1)^\nu}[(pq+1)^\nu + (pq-1)^\nu]$
40.36	$(xy)^{\frac{\nu-1}{2}}[I_{\nu-1}(2\sqrt{xy}) - J_{\nu-1}(2\sqrt{xy})],\quad \operatorname{Re}\nu > 0$	$\frac{\Gamma(\nu)\,pq}{(p^2q^2-1)^\nu}[(pq+1)^\nu - (pq-1)^\nu]$
40.37	$\exp\left\{-\frac{x+y}{a+1}\right\}(xy)^{\frac{\nu-1}{2}} \times J_{\nu-1}\left(\frac{2\sqrt{axy}}{a+1}\right)$, $\operatorname{Re}\nu > 0,\quad \lvert a\rvert < 1$	$\frac{\Gamma(\nu)(a+1)\,a^{\frac{\nu-1}{2}}\,pq}{[(p+1)(q+1)+apq]^\nu}$
40.38	$y^{\nu-1}\left(\frac{x}{y}\right)^{\frac{\nu+n-1}{2}} J_{\nu+n-1}(2\sqrt{axy})$, $\operatorname{Re}\nu > 0$	$\frac{\Gamma(\nu)\,a^{\frac{\nu+n-1}{2}}\,q}{p^{n-1}(pq+a)^\nu}$
40.39	$(xy)^{-\frac{1}{2}} x^\nu J_{2\nu-1}(2\sqrt{xy}),\quad \operatorname{Re}\nu > 0$	$\frac{\Gamma(\nu)\,q}{p^{\nu-1}(pq+1)^\nu}$
40.40	$x^\nu J_{2\nu}(2\sqrt{xy}),\quad \operatorname{Re}\nu > -\frac{1}{2}$	$\frac{\Gamma(\nu+1)\,q}{p^{\nu-1}(pq+1)^{\nu+1}}$

№	$f(x, y)$	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
40.41	$x^{\nu}\left(\frac{x}{y}\right)^{\frac{n}{2}} J_{2\nu+n}(2\sqrt{xy})$ $\operatorname{Re}\nu > -1$ при $n = 1, 2, 3 \ldots$ $\operatorname{Re}\nu > -\frac{1}{2}$ при $n = 0$	$\frac{\Gamma(\nu+1)\,pq}{p^{\nu+n}(pq+1)^{\nu+1}}$
40.42	$x^{\lambda}y^{\nu}J_{\lambda}^{\mu}(x^{\mu}y) = \sum_{n=0}^{\infty}\frac{(-1)^n x^{\lambda+\mu n}y^{\nu+n}}{n!\,\Gamma(1+\lambda+\mu n)}$ $\operatorname{Re}\nu > -1$	$\frac{\Gamma(\nu+1)\,p^{\mu(\nu+1)-\lambda}q}{(1+p^{\mu}q)^{\nu+1}}$
40.43	$x^{\frac{\nu}{2}-\frac{1}{4}}y^{\frac{\nu}{2}-\frac{3}{4}}J_{2\nu-1}(2\sqrt[4]{4xy})$ $\operatorname{Re}\nu > 0$	$\frac{2^{\frac{1-2\nu}{2}}\sqrt{\pi}\exp\left(-\frac{1}{\sqrt{pq}}\right)}{\sqrt{p}\,(pq)^{\nu-1}}$
40.44	$x^{\nu+1}y^{-\frac{\nu}{2}}J_{\nu}(x\sqrt{y})$	$\frac{2^{\nu+1}\Gamma\left(\nu+\frac{3}{2}\right)q}{\sqrt{\pi}\,p^{2\nu-1}}S\left(\nu+\frac{3}{2}, p^2q\right)$
40.45	$x^{\nu}y^{-\frac{\nu}{2}}J_{\nu}(x\sqrt{y})$	$\frac{2^{\nu}\Gamma\left(\nu+\frac{1}{2}\right)q}{\sqrt{\pi}\,p^{2\nu-2}}S\left(\nu+\frac{1}{2}, p^2q\right)$
40.46	$x^{\frac{m}{2}}y^{m}J_m(y\sqrt{2x})$	$\Gamma(2m+1)\,2^{-\frac{m}{2}}q\sqrt{p}\,\times$ $\times\exp\left(\frac{pq^2}{4}\right)D_{-(2m+1)}(q\sqrt{p})$
40.47	$x^{\frac{m}{2}}y^{m-1}J_m(y\sqrt{2x})$	$\Gamma(2m)\,2^{-\frac{m}{2}}q\exp\left(\frac{pq^2}{4}\right)\times$ $\times D_{-2m}(q\sqrt{p})$
40.48	$x^{\frac{m}{2}}y^{m+n-1}J_m(y\sqrt{2x})$	$\Gamma(2m+n)\,2^{-\frac{m}{2}}qp^{\frac{n}{2}}\exp\left(\frac{pq^2}{4}\right)\times$ $\times D_{-(2m+n)}(q\sqrt{p})$

№	$f(x, y)$	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
40.49	$y^{\alpha}\left(\frac{x}{y}\right)^{\frac{\nu}{2}} J_\nu(2\sqrt{xy})\, L_n^{(\alpha)}(y)$ $\operatorname{Re}\nu,\ \alpha > -1$	$\frac{\Gamma(n+\alpha+1)}{n!}\times$ $\times\frac{pq\,[1+(q-1)\,p]^n}{p^{\nu-\alpha}(pq+1)^{n+\alpha+1}}$
40.50	$y^\nu\,[J_\nu(\sqrt{xy})]^2$	$\frac{\Gamma\left(\frac{1}{2}+\nu\right)}{\sqrt{\pi}}\,\frac{p^{\frac{1}{2}}q^{\frac{1}{2}-\nu}}{(pq+1)^{\frac{1}{2}+\nu}}$
40.51	$\left(\frac{x}{y}\right)^\nu J_\nu(\sqrt{xy})\,J_{-\nu}(\sqrt{xy})$	$\left(\frac{q}{p}\right)^\nu\frac{\sqrt{pq}}{\sqrt{pq+1}}$
40.52	$J_m(y\sqrt{x})\,I_m(y\sqrt{x})$	$\pi^{-\frac{1}{2}}\Gamma\left(m+\frac{1}{2}\right)q\sqrt{p}\times$ $\times D_{-m-\frac{1}{2}}\left(q\sqrt{p}\,e^{\frac{i\pi}{4}}\right)\times$ $\times D_{-m-\frac{1}{2}}\left(q\sqrt{p}\,e^{-\frac{i\pi}{4}}\right)$
40.53	$y^{-\frac{1}{2}}J_{\nu+\frac{1}{2}}(\sqrt{2ixy})\times$ $\times J_{\nu+\frac{1}{2}}(\sqrt{-2ixy}),\quad \operatorname{Re}\nu > -1$	$\sqrt{\frac{2}{\pi}}\,q\sqrt{p}\,Q_\nu(pq)$
40.54	$\frac{x}{y}J_x(y)$ при $x > 0,\ y > 0$ 0 в остальных случаях	$\frac{p^2q^2}{p+\operatorname{Arsh} q}$
40.55	$[J_{\frac{\nu}{2}}(\sqrt{axy})]^2$	$\frac{\sqrt{pq}}{\sqrt{pq+a}}\left(\frac{\sqrt{pq+a}-\sqrt{pq}}{\sqrt{a}}\right)^\nu$
40.56	$J_\nu(2\sqrt{axy})\,I_\nu(2\sqrt{axy})$	$\frac{pq}{a^\nu}\,\frac{(\sqrt{p^2q^2+a^2}-pq)^\nu}{\sqrt{p^2q^2+a^2}}$

№	$f(x, y)$	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
40.57	$(xy)^{-\frac{1}{2}}[J_1(2\sqrt{axy}) - I_1(2\sqrt{axy})]$	$\frac{pq}{\sqrt{a}} \ln \frac{pq+a}{pq-a}$
40.58	$(xy)^{\nu-1}\left[J_{\nu-1}\left(\frac{x^2y^2}{2}\right)\right]^2$	$\Gamma(\nu)\, pq \exp\left(\frac{p^2q^2}{4}\right) D_{-\nu}(pq)$
40.59	$\frac{1}{\sqrt{xy}}[J_\mu(\sqrt{axy})]^2, \quad 2\operatorname{Re}\mu > -1$	$\Gamma^2\left(\mu+\frac{1}{2}\right)\sqrt{pq} \times \left\{P^{\mu}_{-\frac{1}{2}}\left(\sqrt{\frac{pq+a}{pq}}\right)\right\}^2$
40.60	$J_\mu(\sqrt{axy})\, J_{\mu+1}(\sqrt{axy})$, $2\operatorname{Re}\mu > -3$	$\Gamma^2\left(\mu+\frac{3}{2}\right)\sqrt{\frac{pq+a}{pq}} \times P^{-\mu}_{-\frac{1}{2}}\left(\sqrt{\frac{pq+a}{pq}}\right) \times P^{-\mu-1}_{-\frac{1}{2}}\left(\sqrt{\frac{pq+a}{pq}}\right)$
40.61	$\frac{\exp\left(-\frac{1}{2xy^2}\right)}{y\sqrt{x}} K_m\left(\frac{1}{2xy^2}\right)$	$4\sqrt{\pi p}\, q K_{2m}\left[(2q\sqrt{p})^{\frac{1}{2}} e^{\frac{i\pi}{4}}\right] \times K_{2m}\left[(2q\sqrt{p})^{\frac{1}{2}} e^{-\frac{i\pi}{4}}\right]$
40.62	$K_0(2\sqrt{axy})$	$\frac{pq}{pq-a} \ln \sqrt{\frac{pq}{a}}$
40.63	$\operatorname{bei}(2\sqrt{axy})$	$\frac{apq}{p^2q^2+a^2}$
40.64	$\operatorname{ber}(2\sqrt{axy})$	$\frac{p^2q^2}{p^2q^2+a^2}$
40.65	$\left(\frac{x}{ay}\right)^{\frac{\nu}{2}} \operatorname{bei}_\nu(2\sqrt{axy}), \quad \operatorname{Re}\nu > -1$	$\frac{p^2q^2 \sin\left(\frac{3\nu\pi}{4}\right) + apq\cos\left(\frac{3\nu\pi}{4}\right)}{p^\nu(p^2q^2+a^2)}$

№	$f(x, y)$	$\bar{f}(p, q) = pq\int\limits_0^\infty\int\limits_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
40.66	$\left(\frac{x}{ay}\right)^{\frac{\nu}{2}} \mathrm{ber}_\nu (2\sqrt{axy}), \quad \mathrm{Re}\,\nu > -1$	$\frac{p^2q^2\cos\left(\frac{3\nu\pi}{4}\right) - apq\sin\left(\frac{3\nu\pi}{4}\right)}{p^\nu(p^2q^2+a^2)}$
40.67	$x^{2m}\,\mathrm{bei}_{4m}\left[2(x\sqrt{2y})^{\frac{1}{2}}\right]$	$\frac{(-1)^m\sqrt{\pi}}{\sqrt{2}\,p^{4m}q^m}\exp\left(-\frac{1}{4p^2q}\right)\times$ $\times D_{2m+1}\left(\frac{1}{p\sqrt{q}}\right)$
40.68	$x^{2m}y^{-\frac{1}{2}}\,\mathrm{ber}_{4m}\left[2(x\sqrt{2y})^{\frac{1}{2}}\right]$	$(-1)^m\sqrt{\pi}\,p^{-4m}q^{\frac{1}{2}-m}\times$ $\times\exp\left(-\frac{1}{4p^2q}\right)D_{2m}\left(\frac{1}{p\sqrt{q}}\right)$
40.69	$(xy)^{-\frac{1}{2}}\,\mathrm{ber}\,(2\sqrt[4]{xy})$	$\pi\sqrt{pq}\,J_0\left(\frac{1}{2\sqrt{pq}}\right)$
40.70	$\mathrm{bei}\left[2(x\sqrt{2y})^{\frac{1}{2}}\right]$	$\sqrt{\frac{\pi}{2}}\exp\left(-\frac{1}{4p^2q}\right)$
40.71	$\frac{1}{\sqrt{y}}\,\mathrm{ber}\left[2(x\sqrt{2y})^{\frac{1}{2}}\right]$	$\sqrt{\pi}\,q\exp\left(-\frac{1}{4p^2q}\right)$
40.72	$\left\{\mathrm{ber}\left[2(x\sqrt{y})^{\frac{1}{2}}\right]\right\}^2 +$ $+\left\{\mathrm{bei}\left[2(x\sqrt{y})^{\frac{1}{2}}\right]\right\}^2$	$\exp\left(\frac{1}{p^2q}\right)$
40.73	$\left[\mathrm{ber}_{n+\frac{1}{2}}(2y\sqrt{x})\right]^2 +$ $+\left[\mathrm{bei}_{n+\frac{1}{2}}(2y\sqrt{x})\right]^2$	$\frac{(-1)^n\Gamma(n+1)}{2\sqrt{\pi}}q\sqrt{p}\times$ $\times D_{-n-1}\left(\frac{q\sqrt{p}}{2}\right)\times$ $\times D_{-n-1}\left(-\frac{q\sqrt{p}}{2}\right)$

§ 41. Функции Бесселя высших порядков

№	$f(x, y)$	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
41.1	$J^{(2)}_{0,0}\left(3\sqrt[3]{xy}\right)$	$e^{-\frac{1}{pq}}$
41.2	$J^{(2)}_{0,0}\left(-3\sqrt[3]{xy}\right)$	$e^{\frac{1}{pq}}$
41.3	$xy^{-\frac{1}{2}} J^{(2)}_{\frac{1}{2},1}\left(3\sqrt[3]{\frac{ax^2y}{4}}\right)$	$\frac{2\sqrt{a}}{\sqrt{\pi}}\left(\frac{q}{p^2q+a}\right)$
41.4	$x^{\frac{2}{3}} y^{-\frac{1}{6}} J^{(2)}_{0,\frac{1}{2}}\left(3\sqrt[3]{\frac{ax^2y}{4}}\right)$	$\frac{2^{\frac{2}{3}} a^{\frac{1}{6}}}{\sqrt{\pi}}\left(\frac{pq}{p^2q+a}\right)$
	$a \neq 0$	
41.5	$x^{\frac{4}{3}} y^{-\frac{5}{6}} J^{(2)}_{1,\frac{3}{2}}\left(3\sqrt[3]{\frac{ax^2y}{4}}\right)$	$\frac{2^{\frac{4}{3}} a^{\frac{5}{6}}}{\sqrt{\pi}}\left[\frac{q}{p(p^2q+a)}\right]$
41.6	$x^{\frac{n+2}{3}} y^{-\frac{2n+1}{6}} J^{(2)}_{\frac{n}{2},\frac{n+1}{2}}\left(3\sqrt[3]{\frac{ax^2y}{4}}\right)$	$\frac{2^{\frac{n+2}{3}} a^{\frac{2n+1}{6}}}{\sqrt{\pi}}\left[\frac{q}{p^{n-1}(p^2q+a)}\right]$
41.7	$x^{\frac{2m-n}{3}+1} y^{\frac{2n-m}{3}} J^{(2)}_{m,n}\left(3\sqrt[3]{xy}\right)$	$\frac{(m+1)pq-1}{p^{m+2}q^{n+1}}\exp\left(-\frac{1}{pq}\right)$
41.8	$x^{\frac{2m-n}{3}} y^{\frac{2n-m}{3}} J^{(2)}_{m,n}\left(3\sqrt[3]{xy}\right)$	$\frac{1}{p^m q^n}\exp\left(-\frac{1}{pq}\right)$
41.9	$\frac{1}{3}(xy)^{\frac{n}{3}}\ln(xy)\,J^{(2)}_{n,n}\left(3\sqrt[3]{xy}\right) + (xy)^{\frac{n}{3}}\frac{d}{dn}J^{(2)}_{n,n}\left(3\sqrt[3]{xy}\right)$	$-\frac{1}{(pq)^n}\ln(pq)\exp\left(-\frac{1}{pq}\right)$

№	$f(x, y)$	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
41.10	$(xy)^{\frac{2\nu-1}{3}} J^{(2)}_{\nu+\mu-\frac{1}{2},\,2\mu}\left(3\sqrt[3]{xy}\right)$ $\operatorname{Re}(\mu+\nu) > -\frac{1}{2}$	$\frac{\Gamma\left(\mu+\nu+\frac{1}{2}\right)}{\Gamma(2\mu+1)}\frac{1}{(pq)^{\nu-1}}\times$ $\times\exp\left(-\frac{1}{2pq}\right)M_{\nu,\mu}\left(\frac{1}{pq}\right)$
41.11	$x^{\frac{1}{3}}y^{\frac{1}{6}}J^{(2)}_{0,\,-\frac{1}{2}}\left(3\sqrt[3]{\frac{ax^2y}{4}}\right)$	$\frac{2^{\frac{1}{3}}a^{-\frac{1}{6}}}{\sqrt{\pi}}\left(\frac{p^2q}{p^2q+a}\right)$
41.12	$(xy)^{\frac{1}{2}}J^{(2)}_{-\frac{1}{4},\,\frac{1}{4}}\left(3\sqrt[3]{\frac{x^2y^2}{8}}\right)$	$\frac{pq}{\sqrt{2}}\exp\left(\frac{p^2q^2}{4}\right)D_{-\frac{3}{2}}(pq)$
41.13	$\sqrt{x}\,J^{(2)}_{-\frac{1}{4},\,\frac{1}{4}}\left(3\sqrt[3]{\frac{x^2y^2}{8}}\right)$	$\sqrt{\frac{2}{\pi}}\,q\sqrt{p}\,\exp\left(\frac{p^2q^2}{4}\right)D_{-1}(pq)$
41.14	$x^{\frac{4k+1}{6}}y^{\frac{6m-2k-2}{6}}\times$ $\times J^{(2)}_{k,\,-\frac{1}{2}}\left(3\sqrt[3]{\frac{xy}{2}}\right)$	$(-1)^m 2^{-\frac{1}{6}(6m+2k-1)}p^{-k}q^{\frac{1}{2}-m}\times$ $\times\exp\left(-\frac{1}{4pq}\right)D_{2m}\left(\frac{1}{\sqrt{pq}}\right)$
41.15	$x^{\frac{1}{6}(4k+1)}y^{\frac{1}{6}(6m-2k+1)}\times$ $\times J^{(2)}_{\frac{1}{2}(2k+1),\,\frac{1}{2}}\left(3\sqrt[3]{\frac{xy}{2}}\right)$	$(-1)^m 2^{-\frac{1}{3}(3m+k+1)}p^{-k}q^{-m}\times$ $\times\exp\left(-\frac{1}{4pq}\right)D_{2m+1}\left(\frac{1}{\sqrt{pq}}\right)$
41.16	$(xy)^{\frac{m+1}{3}}J^{(2)}_{\frac{m-1}{2},\,\frac{m}{2}}\left(3\sqrt[3]{\frac{x^2y^2}{8}}\right)$	$\sqrt{\frac{2}{\pi}}\,\Gamma(m+1)\,pq\exp\left(\frac{p^2q^2}{4}\right)\times$ $\times D_{-(m+1)}(pq)$
41.17	$x^{\frac{1}{3}(m+1)}y^{\frac{1}{3}(m+3k-2)}\times$ $\times J^{(2)}_{\frac{1}{2}(m-1),\,\frac{1}{2}m}\left(3\sqrt[3]{\frac{x^2y^2}{8}}\right)$	$\sqrt{\frac{2}{\pi}}\,\Gamma(m+k)\,p^kq\exp\left(\frac{p^2q^2}{4}\right)\times$ $\times D_{-(m+k)}(pq)$

§ 42. Гамма-функция и родственные ей функции. Интегральные функции. Вырожденные гипергеометрические функции

№	$f(x, y)$	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
42.1	$\frac{y^{x-1}}{\Gamma(x)}$ при $x > 1$ 0 при $x < 1$	$\frac{pe^{-p}}{p+\ln q}$
42.2	0 при $x > 1$ $\frac{y^{x+n-1}}{\Gamma(x+n)}$ при $x < 1$ $n > 0$	$\frac{p}{q^n}\left(\frac{q-e^{-p}}{p+\ln q}\right)$
42.3	$\frac{y^x}{\Gamma(x+1)}$	$\frac{p}{p+\ln q}$
42.4	$\frac{y^{x+1}}{\Gamma(x+2)}$	$\frac{p}{q(p+\ln q)}$
42.5	$\frac{y^{x+n}}{\Gamma(x+n+1)}$	$\frac{p}{q^n(p+\ln q)}$
42.6	$\frac{xy^{x-1}}{\Gamma(x)}$	$\frac{pq}{(p+\ln q)^2}$
42.7	$\frac{y^x}{\Gamma(x)}$	$\frac{p}{(p+\ln q)^2}$
42.8	$\frac{x^n y^x}{n!\,\Gamma(x+1)}$	$\frac{p}{(p+\ln q)^{n+1}}$
42.9	$\frac{x^m y^{x+n}}{m!\,\Gamma(x+n+1)}$	$\frac{p}{q^n(p+\ln q)^{m+1}}$
42.10	$x\int_0^\infty \frac{(xy)^{\xi-1}}{\Gamma(\xi)\,\Gamma(\xi+1)}\,d\xi$	$\frac{q}{\ln pq}$
42.11	$x^n\int_0^\infty \frac{(xy)^{\xi-1}}{\Gamma(\xi)\,\Gamma(\xi+n)}\,d\xi$	$\frac{q}{p^{n-1}\ln pq}$

№	$f(x, y)$	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
42.12	$2Ji_0(2\sqrt{axy}) + \ln a$	$\ln(pq + a)$
42.13	$\mathrm{Ei}(-x)$ при $y > x$ $\mathrm{Ei}(-y)$ при $y < x$	$-\ln(p + q + 1)$
42.14	$\mathrm{Ei}(-x) + \mathrm{Ei}(-y)$	$-\ln[(p+1)(q+1)]$
42.15	$\mathrm{Ei}(-y)$ при $y > x$ $\mathrm{Ei}(-x)$ при $y < x$	$-\ln\dfrac{(p+1)(q+1)}{p+q+1}$
42.16	$\mathrm{Ei}(-x) - \mathrm{Ei}(-y)$ при $y > x$ $\mathrm{Ei}(-y) - \mathrm{Ei}(-x)$ при $y < x$	$\ln\dfrac{(p+1)(q+1)}{(p+q+1)^2}$
42.17	$\mathrm{Ei}(xy)$	$e^{-pq}\,\mathrm{Ei}(pq) - \ln pq - C$
42.18	$\dfrac{1}{\sqrt{xy}}\,\mathrm{Ei}\left(-\dfrac{1}{64xy^2}\right)$	$4\pi\sqrt{pq}\,\mathrm{Ei}\left(-\sqrt{q\sqrt{p}}\right)$
42.19	$\mathrm{erf}\left(\dfrac{x}{2\sqrt{y}}\right)$	$\dfrac{\sqrt{q}}{p + \sqrt{q}}$
42.20	$\mathrm{erfc}\left(\dfrac{y}{2\sqrt{x}}\right)$	$\dfrac{q}{q + \sqrt{p}}$
42.21	$\exp(a^2x + ay)\,\mathrm{erfc}\left(a\sqrt{x} + \dfrac{y}{2\sqrt{x}}\right)$	$\dfrac{q\sqrt{p}}{(\sqrt{p} + a)(\sqrt{p} + q)}$
42.22	$xy^2\chi(y, x) + \left(x + \dfrac{y^2}{2}\right)\mathrm{erfc}\left(\dfrac{y}{2\sqrt{x}}\right)$	$\dfrac{q}{p(q + \sqrt{p})}$
42.23	$y^{-\frac{1}{2}} e^{xy^2}[1 - \mathrm{erf}(y\sqrt{x})]$	$\pi p^{\frac{1}{4}} q \exp(q\sqrt{p}) \times$ $\times\left[1 - \mathrm{erf}\left(\sqrt{q\sqrt{p}}\right)\right]$
42.24	$y^{-\nu-1}\exp\left(-\dfrac{x^2}{8y}\right) D_{2\nu+1}\left(\dfrac{x}{\sqrt{2y}}\right)$ $\mathrm{Re}\,\nu < \dfrac{1}{2}$	$\dfrac{2^{\nu+\frac{1}{2}}\sqrt{\pi}\,pq^{\nu+1}}{p + \sqrt{q}}$

№	$f(x, y)$	$\bar{f}(p, q) = pq \int_0^\infty \int_0^\infty e^{-px-qy} f(x, y)\, dx\, dy$
42.25	$x^{\mu-\frac{1}{4}} y^{-\frac{1}{2}} \exp\left(-\frac{1}{2xy^2}\right) \times D_{-2\mu-\frac{1}{2}}\left(\sqrt{\frac{2}{xy^2}}\right)$	$2^{\frac{1}{4}-\mu} \pi p^{\frac{1}{4}-\mu} \sqrt{q} \times \exp\left(-2\sqrt{q\sqrt{p}}\right)$
42.26	$x^{\frac{1}{2}\left(n-\frac{1}{2}\right)} y^{m-\frac{1}{2}} \exp\left(\frac{xy^2}{2}\right) \times D_{-n-\frac{1}{2}}\left(y\sqrt{2x}\right)$ $\operatorname{Re}(n-m) > -3$	$\sqrt{\pi}\, \Gamma\left(m+\frac{1}{2}\right) 2^{-\frac{1}{2}\left(n+\frac{1}{2}\right)} \times p^{\frac{1}{4}(m-n+1)} q^{\frac{1}{2}(n-m+1)} \times \exp\left(\frac{q\sqrt{p}}{2}\right) \times W_{-\frac{1}{2}(n+m),\, -\frac{1}{2}(n-m)}\left(q\sqrt{p}\right)$
42.27	$y^{\frac{\mu-1}{2}} x^{-\frac{\mu+1}{2}} \exp\left(-\frac{xy}{2}\right) \times W_{\nu-\frac{\mu+1}{2},\, \frac{\mu}{2}}(xy)$ $\operatorname{Re}\nu > 0,\quad \operatorname{Re}\mu > -1$	$\frac{(-1)^{\nu-\mu-1}\Gamma(\nu)\, q}{p^{\mu-1}} S(\nu, pq)$
42.28	$x^{-k} \exp\left(-\frac{1}{2xy^2}\right) W_{k,\, m}\left(\frac{1}{xy^2}\right)$	$4p^{k+\frac{1}{2}} q K_{2m}\left[\left(2q\sqrt{p}\right)^{\frac{1}{2}} e^{\frac{i\pi}{4}}\right] \times K_{2m}\left[\left(2q\sqrt{p}\right)^{\frac{1}{2}} e^{-\frac{i\pi}{4}}\right]$
42.29	$x^{n-1} y^{-\mu} \exp\left(-\frac{xy}{2}\right) \times M_{\mu,\, n-\frac{1}{2}}(xy)$	$\Gamma(1+n-\mu)\, \Gamma(2n)\, p^{1-n} q^{\mu} \times \exp\left(\frac{pq}{2}\right) W_{-n,\, -\mu+\frac{1}{2}}(pq)$
42.30	$x^{\lambda-\frac{1}{2}} y^{-2\lambda-1} \exp\left(-\frac{xy^2}{2}\right) \times M_{\mu-\lambda,\, \lambda}(xy^2)$	$2^{-\mu-1}\sqrt{\pi}\, \Gamma\left(\frac{1}{2}-\mu\right) \Gamma(2\lambda+1) \times q^{\mu+1} p^{\frac{1}{2}(1+\mu-4\lambda)} \times \left[\mathbf{H}_{-\mu}\left(q\sqrt{p}\right) - Y_{-\mu}\left(q\sqrt{p}\right)\right]$

№	$f(x, y)$	$\bar{f}(p, q) = pq \int_0^\infty \int_0^\infty e^{-px-qy} f(x, y)\, dx\, dy$
42.31	$\dfrac{x^{\mu-k} y^{\nu}}{\Gamma(\mu-k)\,\Gamma(\nu-1)} \times {}_2F_1\left(k,\ k-\mu;\ \nu+1;\ \dfrac{y}{x}\right)$ при $y > x$; $\dfrac{x^{\mu} y^{\nu-k}}{\Gamma(\mu+1)\,\Gamma(\nu-k)} \times {}_2F_1\left(k,\ k-\nu;\ \mu+1;\ \dfrac{x}{y}\right)$ при $x > y$	$\dfrac{1}{p^{\mu-k} q^{\nu-k} (p+q)^k}$ $\mu,\ \nu > -1$

§ 43. Разные функции

№	$f(x, y)$	$\bar{f}(p, q)$
43.1	$\dfrac{1}{\sqrt{xy}}\, {}_0F_1\left(1;\ \dfrac{1}{16xy}\right)$	$\sqrt{\pi pq}\, {}_0F_1(1;\ \sqrt{pq})$
43.2	${}_mF_{n+2}(a_1, \ldots, a_m;\ b_1, \ldots, b_n,\ 1,\ 1;\ xy)$ $n \geqslant m-3$	${}_mF_n\left(a_1, \ldots, a_m;\ b_1, \ldots, b_n,\ \dfrac{1}{pq}\right)$
43.3	${}_0F_n\left(\dfrac{1}{n},\ \dfrac{2}{n},\ \ldots,\ \dfrac{n-1}{n},\ 1;\ -\dfrac{ax^n y}{n^n}\right)$ $n > 0$	$\dfrac{p^n q}{p^n q + n}$
43.4	$\dfrac{x^{n-1}}{(n-1)!}\, {}_0F_n\left(1,\ 1+\dfrac{1}{n},\ 1+\dfrac{2}{n},\ \ldots,\ 1+\dfrac{n-1}{n};\ -\dfrac{ax^n y}{n^n}\right)$ $n > 0$	$\dfrac{pq}{p^n q + a}$
43.5	$\dfrac{x^{m-1}}{(m-1)!}\, {}_0F_n\left(\dfrac{m}{n},\ \dfrac{m+1}{n},\ \ldots,\ \dfrac{m+n-1}{n};\ -\dfrac{ax^n y}{n^n}\right)$	$\dfrac{p^{n-m+1} q}{p^n q + a}$ $m,\ n > 0$
43.6	$x^{m-1} y^{n-1} \times {}_1F_{m+n}\left(1;\ 1,\ 1+\dfrac{1}{m},\ \ldots,\ 2-\dfrac{1}{m},\ 1,\ 1+\dfrac{1}{n},\ \ldots,\ 2-\dfrac{1}{n};\ -\dfrac{ax^m y^n}{m^m n^n}\right)$	$\dfrac{(m-1)!\,(n-1)!\,pq}{p^m q^n + a}$

№	$f(x, y)$	$\bar{f}(p, q) = pq \int_0^\infty \int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$
43.7	$x^{\alpha-1}y^{\beta-1} \times {}_1F_{m+n}\left(1, \frac{\alpha}{m}, \frac{\alpha+1}{m}, \ldots, \frac{\alpha+m-1}{m}, \frac{\beta}{n}, \frac{\beta+1}{n}, \ldots, \frac{\beta+n-1}{n}; -\frac{ax^m y^n}{m^m n^n}\right)$ α, β — целые положительные	$\frac{(\alpha-1)!\,(\beta-1)!\,p^{m-\alpha+1}q^{n-\beta+1}}{p^m q^n + a}$
43.8	$L_n(x+y)$	$\sum_{k=0}^{n}(-1)^k\binom{n}{k}\sum_{i=0}^{k}\frac{1}{p^i q^{k-i}}$
43.9	$L_n'(x+y)$	$\frac{(p-1)^n q^n-(q-1)^n p^n}{(q-p)\,p^{n-1}q^{n-1}}$
43.10	$\frac{P(xy, n)}{y^n}, \quad n>0$	$\frac{(n-1)!\,q}{p^{n-1}}\,S(n, pq)$
43.11	$\frac{(y^2-x^2)^{\frac{\mu-1}{2}}}{x}P_\nu^{1-\mu}\left(\frac{y}{x}\right)$ при $y>x$; 0 при $y<x$; $-1<\operatorname{Re}\nu<0$	$-\frac{\pi p}{\sin(\nu\pi)\,q^{\mu-1}}P_\nu\left(\frac{p}{q}\right)$
43.12	$y^{-n}U(2\beta xy, 2\sqrt{\alpha xy})$	$\left(\frac{\beta}{p}\right)^{n-1} q\left[\sin\left(\frac{pq+\alpha}{\beta}\right)\times \operatorname{Ci}\left(\frac{pq+\alpha}{\beta}\right)-\cos\left(\frac{pq+\alpha}{\beta}\right)\times \operatorname{Si}\left(\frac{pq+\alpha}{\beta}\right)\right]$

Глава IV
ФОРМУЛЫ ОБРАЩЕНИЯ ДВУМЕРНОГО ПРЕОБРАЗОВАНИЯ ЛАПЛАСА — КАРСОНА

§ 44. Основные функциональные соотношения

№	$\bar{f}(p, q) = pq \int_0^\infty \int_0^\infty e^{-px-qy} f(x, y)\, dx dy$	$f(x, y)$
44.1	$\bar{f}(p, q)$	$f(x, y) = \frac{1}{(2\pi i)^2} \times \int_{\sigma - i\infty}^{\sigma + i\infty} \int_{\tau - i\infty}^{\tau + i\infty} e^{px+qy} \frac{\bar{f}(p, q)}{pq}\, dp dq$
44.2	$\frac{pq}{(p+a)(q+b)} \bar{f}(p+a, q+b)$	$e^{-ax-by} f(x, y)$
44.3	$pq \frac{\partial^{m+n}}{\partial p^m \partial q^n} \left[\frac{\bar{f}(p, q)}{pq} \right]$	$(-x)^m (-y)^n f(x, y)$
44.4	$pq \frac{\partial^{m+n}}{\partial p^m \partial q^n} \bar{f}(p, q)$	$(-x)^m (-y)^n \frac{\partial^2 f(x, y)}{\partial x \partial y}$
44.5	$\frac{p}{2} \int_0^\infty \frac{1}{\lambda \sqrt{\pi\lambda}} e^{-\frac{p^2}{4\lambda}} \bar{f}(\lambda, q)\, d\lambda$	$f(x^2, y)$
44.6	$\frac{p^2}{2} \int_0^\infty \frac{\exp\left(-\frac{p^2}{4\lambda}\right)}{2\sqrt{\pi\lambda^3}\ \lambda} \bar{f}(\lambda, q)\, d\lambda$	$x f(x^2, y)$

№	$\bar{f}(p,q)= pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x,y)\,dx\,dy$	$f(x,y)$
44.7	$\frac{pq}{4\pi}\int_0^\infty\int_0^\infty \frac{\exp\left[-\frac{p^2}{4\lambda}-\frac{q^2}{4\mu}\right]}{\lambda\mu\sqrt{\lambda\mu}}\times$ $\times\bar{f}(\lambda,\mu)\,d\lambda\,d\mu$	$f(x^2, y^2)$
44.8	$pq\int_0^\infty\int_0^\infty (\lambda\mu)^{-\frac{5}{2}} e^{-\frac{p}{\lambda}-\frac{q}{\mu}}\times$ $\times\bar{f}(\lambda,\mu)\,d\lambda\,d\mu$	$\sqrt{xy}\, f\left(\frac{1}{x}, \frac{1}{y}\right)$
44.9	$pq\int_p^\infty\int_q^\infty \frac{\bar{f}(\lambda,\mu)}{\lambda\mu}\,d\lambda\,d\mu$	$\frac{f(x,y)}{xy}$
44.10	$\frac{1}{pq}\bar{f}_1(p,q)\bar{f}_2(p,q)$	$\int_0^x\int_0^y f_1(\xi,\eta) f_2(x-\xi, y-\eta)\,d\xi\,d\eta$
44.11	$\int_0^\infty\int_0^\infty \frac{\bar{f}(\lambda,\mu)}{\lambda\mu}\,d\lambda\,d\mu$	$\int_0^\infty\int_0^\infty \frac{f(\xi,\eta)}{\xi\eta}\,d\xi\,d\eta$
44.12	$\frac{pq}{pq+1}\bar{f}\left(p+\frac{1}{q}\right)$	$J_0(2\sqrt{xy})\, f(x)$
44.13	$\frac{p\sqrt{q}}{p+\sqrt{q}}\bar{f}(p+\sqrt{q})$	$\frac{1}{\sqrt{\pi y}} e^{-\frac{x^2}{4y}} f(x)$
44.14	$\int_0^\infty\int_0^\infty \left(\frac{\lambda}{p}\right)^{\frac{\alpha}{2}-1}\left(\frac{\mu}{q}\right)^{\frac{\beta}{2}-1}\times$ $\times J_\alpha(2\sqrt{p\lambda})\, J_\beta(2\sqrt{p\lambda})\times$ $\times\bar{f}(\lambda,\mu)\,d\lambda\,d\mu$	$x^{\alpha-1}y^{\beta-1} f\left(\frac{1}{x}, \frac{1}{y}\right)$

§ 45. Рациональные функции

№	$\bar{f}(p, q) = pq \int_0^\infty \int_0^\infty e^{-px-qy} f(x, y)\, dx\, dy$	$f(x, y)$
45.1	1	1
45.2	$\frac{1}{p^m q^n}$	$\frac{x^m y^n}{m!\, n!}$
45.3	$\frac{pq}{(p-a)(q-b)}$	e^{ax+by}
45.4	$\frac{pq}{pq+a}$	$J_0(2\sqrt{axy})$
45.5	$\frac{pq}{pq-a}$	$I_0(2\sqrt{axy})$
45.6	$\frac{pq}{p^2q^2+a^2}$	$\frac{1}{a}\,\mathrm{bei}(2\sqrt{axy})$
45.7	$\frac{p^2q^2}{p^2q^2+a^2}$	$\mathrm{ber}(2\sqrt{axy})$
45.8	$\frac{pq}{(p-a)(p+q-a)}$	$\begin{cases} 0 & \text{при } y > x \\ e^{ax} & \text{при } y < x \end{cases}$
45.9	$\frac{pq}{pq-ap-bq+c}$	$e^{bx+ay} J_0(2\sqrt{(c-ab)xy})$
45.10	$\frac{pq}{p^2+apq+b}$, $a>0$	0 при $y > ax$ $\frac{1}{a} J_0\left(\frac{2}{a}\sqrt{by(ax-y)}\right)$ при $y < ax$
45.11	$\frac{pq}{(p+\alpha q+b)(p+aq+d)+c}$ $0 \leqslant \alpha < a$	$\frac{1}{a-\alpha}\exp\left(-b\frac{y-\alpha x}{a-\alpha} - d\frac{ax-y}{a-\alpha}\right) \times$ $\times J_0\left(\frac{2}{a-\alpha}\sqrt{c(y-\alpha x)(ax-y)}\right)$ при $\alpha x < y < ax$ 0 в остальных случаях

№	$\bar{f}(p,q)=$ $=pq\int\limits_0^\infty\int\limits_0^\infty e^{-px-qy}f(x,y)\,dx\,dy$	$f(x,y)$
45.12	$\dfrac{pq}{ap^2+2bpq+cq^2+2dp+2eq+f}$ $b^2>ac$	$\dfrac{1}{2D}\exp\dfrac{(bd-ae)\,y-(be-cd)\,x}{D^2}\times$ $\times J_0\left(\dfrac{1}{D^2}\sqrt{cx^2-2bxy+ay^2}\times\right.$ $\left.\times\sqrt{acf+2bde-b^2f-ae^2-cd^2}\right)$ при $(b-D)\,x<ay<(b+D)\,x$ 0 в остальных случаях $D=\sqrt{b^2-ac}$
45.13	$\dfrac{pq}{(p+aq+b)}\times$ $\times\dfrac{1}{[(p+aq+b)(p+\alpha q+d)+c]}$ $0\leqslant\alpha<a$	$\dfrac{1}{a-\alpha}\exp\left[-b\left(\dfrac{y-\alpha x}{a-\alpha}\right)-\right.$ $\left.-d\left(\dfrac{ax-y}{a-\alpha}\right)\right]\left[\dfrac{y-\alpha x}{c\,(ax-y)}\right]^{\frac{1}{2}}\times$ $\times J_1\left(\dfrac{2}{a-\alpha}\sqrt{c(y-\alpha x)(ax-y)}\right)$ при $\alpha x<y<ax$ 0 в остальных случаях
45.14	$\dfrac{pq}{(pq+b)^2+a^2}$	$\dfrac{1}{a}\dfrac{\partial}{\partial x}[J_0(2\sqrt{bxy})\overset{x}{*}\operatorname{bei}(2\sqrt{axy})]$*
45.15	$\dfrac{pq}{p^2q^2+apq+a^2}$	$\dfrac{2}{a\sqrt{3}}\dfrac{\partial}{\partial x}[J_0\sqrt{2axy})\overset{x}{*}$ $\overset{x}{*}\operatorname{bei}\left(\sqrt{2\sqrt{3}axy}\right)]$

* Начиная с этой формулы знак $\overset{x}{*}$ обозначает свертку по x, знак $\overset{y}{*}$ — свертку по y:

$$f_1(x,y)\overset{x}{*}f_2(x,y)=\int\limits_0^x f_1(\xi,y)\,f_2(x-\xi,y)\,d\xi$$

$$f_1(x,y)\overset{y}{*}f_2(x,y)=\int\limits_0^y f_1(x,\eta)\,f_2(x,y-\eta)\,d\eta$$

№	$\bar{f}(p, q) = pq \int\limits_0^\infty \int\limits_0^\infty e^{-px-qy} f(x, y)\, dx\, dy$	$f(x, y)$
45.16	$\frac{pq}{(pq+b)^2+a^2}$	$\frac{1}{a}\frac{\partial}{\partial x}[J_0(2\sqrt{bxy}) \overset{x}{*} \operatorname{bei}(2\sqrt{axy})]$
45.17	$\frac{p^2q}{(pq+b)^2+a^2}$	$J_0(2\sqrt{bxy}) \overset{y}{*} \left[\operatorname{ber}(2\sqrt{axy}) - \frac{b}{a}\operatorname{bei}(2\sqrt{axy})\right]$
45.18	$\frac{p^2q}{(pq+b)^2-a^2}$	$\frac{1}{2a}\left[\sqrt{(a+b)\frac{y}{x}} \times J_1(2\sqrt{(a+b)xy}) - \sqrt{(b-a)\frac{y}{x}} \times J_1(2\sqrt{(b-a)xy})\right]$
45.19	$\frac{p^2q}{p^2q^2+apq+a^2}$	$J_0(\sqrt{2axy}) \overset{y}{*} \left[\operatorname{ber}(\sqrt{2\sqrt{3}axy}) - \frac{1}{\sqrt{3}}\operatorname{bei}(\sqrt{2\sqrt{3}axy})\right]$
45.20	$\frac{p^2q}{p^2q^2+a^2}$	$\frac{1}{a}\frac{\partial}{\partial x}\operatorname{bei}(2\sqrt{axy}) = \sqrt{\frac{y}{2ax}}[\operatorname{bei}_1(2\sqrt{axy}) - \operatorname{ber}_1(2\sqrt{axy})]$
45.21	$\frac{p^2q}{p^2q^2-a^2}$	$\frac{1}{2}\sqrt{\frac{y}{ax}}[J_1(2\sqrt{axy}) + I_1(2\sqrt{axy})]$
45.22	$\frac{p^2q}{p^3q+a}$	$x\,{}_0F_3\left(\frac{2}{3},\ 1,\ \frac{4}{3};\ -\frac{ax^3y}{27}\right)$

№	$\bar{f}(p,q) = pq\int\limits_0^\infty\int\limits_0^\infty e^{-px-qy} f(x,y)\,dx\,dy$	$f(x,y)$
45.23	$\frac{p^2q}{p^3q+ap^2+b}$	$\frac{\partial}{\partial x}\left[J_0(2\sqrt{axy}) \overset{x}{\underset{*}{}} x\ {}_0F_3\left(\frac{2}{3},\ 1,\ \frac{4}{3};\ -\frac{bx^3y}{27}\right)\right]$
45.24	$\frac{p^2q^2}{(pq+b)^2+a^2}$	$\frac{\partial}{\partial x}\left[J_0(2\sqrt{bxy}) \overset{x}{\underset{*}{}} \left(\operatorname{ber}(2\sqrt{axy}) - \frac{b}{a}\operatorname{bei}(2\sqrt{axy})\right)\right]$
45.25	$\frac{p^2q^2}{p^2q^2+apq+a^2}$	$\frac{\partial}{\partial x}\left[J_0(\sqrt{2axy}) \overset{x}{\underset{*}{}} \left(\operatorname{ber}(\sqrt{a\sqrt{3}xy}) - \frac{1}{\sqrt{3}}\operatorname{bei}(\sqrt{a\sqrt{3}xy})\right)\right]$
45.26	$\frac{p^3q}{p^3q+a}$	${}_0F_3\left(\frac{1}{3},\ \frac{2}{3},\ 1;\ -\frac{ax^3y}{27}\right)$
45.27	$\frac{p^3q}{p^3q+ap^2+b}$	$\frac{\partial}{\partial x}\left[J_0(2\sqrt{axy}) \overset{x}{\underset{*}{}} {}_0F_3\left(\frac{1}{3},\ \frac{2}{3},\ 1;\ -\frac{bx^3y}{27}\right)\right]$
45.28	$\frac{pq(pq+b)}{(pq+b)^2+a^2}$	$\frac{\partial}{\partial x}\left[J_0(2\sqrt{bxy}) \overset{x}{\underset{*}{}} \operatorname{ber}(2\sqrt{axy})\right]$
45.29	$\frac{pq(pq+a)}{p^2q^2+apq+a^2}$	$\frac{\partial}{\partial x}\left\{J_0(\sqrt{2axy}) \overset{x}{\underset{*}{}} \left[\operatorname{ber}(\sqrt{2\sqrt{3}axy}) + \frac{1}{\sqrt{3}}\operatorname{bei}\sqrt{2\sqrt{3}axy}\right]\right\}$
45.30	$\frac{pq(pq-a)}{p^2q^2+apq+a^2}$	$\frac{\partial}{\partial x}\left\{J_0(\sqrt{2axy}) \overset{x}{\underset{*}{}} \left[\operatorname{ber}(\sqrt{2\sqrt{3}axy}) - \sqrt{3}\operatorname{bei}(\sqrt{2\sqrt{3}axy})\right]\right\}$

№	$\bar{f}(p, q) = pq \int_0^\infty \int_0^\infty e^{-px-qy} f(x, y)\, dx dy$	$f(x, y)$
45.31	$\frac{pq(p+q)}{(p^2+1)(q^2+1)}$	$\sin(x+y)$
45.32	$\frac{pq(p+q)}{(p^2-1)(q^2-1)}$	$\operatorname{sh}(x+y)$
45.33	$\frac{pq(pq-1)}{(p^2+1)(q^2+1)}$	$\cos(x+y)$
45.34	$\frac{pq(pq+1)}{(p^2-1)(q^2-1)}$	$\operatorname{ch}(x+y)$
45.35	$\frac{pq}{(pq+b)^2+a^2}$	$\frac{1}{a} J_0(2\sqrt{bxy}) \overset{x}{*} \operatorname{bei}(2\sqrt{axy})$
45.36	$\frac{q}{p^2q^2-a^2}$	$\frac{1}{2a}\sqrt{\frac{x}{ay}}[I_1(2\sqrt{axy}) - J_1(2\sqrt{axy})]$
45.37	$\frac{p^2}{p^2q^2+a^2}$	$-\frac{y}{ax}\operatorname{bei}_2(2\sqrt{axy})$
45.38	$\frac{p^2}{p^2q^2-a^2}$	$\frac{y}{2ax}[J_2(2\sqrt{axy}) + I_2(2\sqrt{axy})]$
45.39	$\frac{q(pq+a)}{p^2q^2+a^2}$	$-\sqrt{\frac{2x}{ay}}\operatorname{ber}_1(2\sqrt{axy})$
45.40	$\frac{q(pq-a)}{p^2q^2+a^2}$	$\sqrt{\frac{2x}{ay}}\operatorname{bei}_1(2\sqrt{axy})$
45.41	$\frac{p(pq-a)}{p^2q^2+apq+a^2}$	$J_0(2\sqrt{axy}) \overset{y}{*} \left[\operatorname{ber}\left(\sqrt{2\sqrt{3}axy}\right) - \sqrt{3}\operatorname{bei}\left(\sqrt{2\sqrt{3}axy}\right)\right]$
45.42	$\frac{q(pq+b)}{(pq+b)^2+a^2}$	$J_0(2\sqrt{bxy}) \overset{x}{*} \operatorname{ber}(2\sqrt{axy})$

№	$\bar{f}(p\ q)=$ $=pq\int\limits_0^\infty\int\limits_0^\infty e^{-px-qy}f(x,y)\,dx\,dy$	$f(x,y)$
45.43	$\dfrac{p\,(bpq+b^2-a^2)}{(pq+b)^2-a^2}$	$\dfrac{1}{2}\sqrt{(b+a)\dfrac{y}{x}}\times$ $\times J_1\left(2\sqrt{(b+a)\dfrac{y}{x}}\right)+$ $+\sqrt{(b-a)\dfrac{y}{x}}\times$ $\times J_1\left(2\sqrt{(b-a)\dfrac{y}{x}}\right)\Big]$
45.44	$\dfrac{p\,(ap^2+b)}{p^3q+ap^2+b}$	$-\dfrac{\partial^2}{\partial x^2}\left[J_0(2\sqrt{axy})\overset{x}{*}\right.$ $\left.\overset{x}{*}{}_0F_3\left(\dfrac{1}{3},\ \dfrac{2}{3},\ 1;\ -\dfrac{bx^3y}{27}\right)\right]$
45.45	$\dfrac{p^2q}{p^4q+a}$	$\dfrac{x^2}{2}\,{}_0F_4\left(\dfrac{3}{4},\ 1,\ \dfrac{5}{4},\ \dfrac{6}{4};\ -\dfrac{ax^4y}{4^4}\right)$
45.46	$\dfrac{pq^2}{p^3q^2+a}$	$\dfrac{x^2}{2}\,{}_0F_4\left(\dfrac{1}{2},\ 1,\ \dfrac{4}{3},\ \dfrac{5}{3};\ -\dfrac{ax^3y^2}{3^32^2}\right)$
45.47	$\dfrac{p^2q^2}{p^3q^2+a}$	$x\,{}_0F_4\left(\dfrac{1}{2},\ \dfrac{2}{3},\ 1,\ \dfrac{4}{3};\ -\dfrac{ax^3y^2}{3^32^2}\right)$
45.48	$\dfrac{p^3q}{p^3q^2+a}$	$y\,{}_0F_4\left(\dfrac{3}{2},\ \dfrac{1}{3},\ \dfrac{2}{3},\ 1;\ -\dfrac{ax^3y^2}{3^32^2}\right)$
45.49	$\dfrac{p^3q}{p^4q+a}$	$x\,{}_0F_4\left(\dfrac{2}{4},\ \dfrac{3}{4},\ 1,\ \dfrac{5}{4};\ -\dfrac{ax^4y}{4^4}\right)$
45.50	$\dfrac{p^3q^2}{p^3q^2+a}$	${}_0F_4\left(\dfrac{1}{2}\ \ \dfrac{1}{3},\ \dfrac{2}{3},\ 1;\ -\dfrac{ax^3y^2}{3^32^2}\right)$
45.51	$\dfrac{p^4q}{p^4q+a}$	${}_0F_4\left(\dfrac{1}{4},\ \dfrac{2}{4},\ \dfrac{3}{4},\ 1;\ -\dfrac{ax^4y}{4^4}\right)$

№	$\bar{f}(p, q) = pq \int_0^\infty \int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
45.52	$\dfrac{q}{p(p^3q+a)}$	$\dfrac{x^4}{4!}\,{}_0F_3\left(\dfrac{5}{3}, \dfrac{6}{3}, \dfrac{7}{3}; -\dfrac{ax^3y}{27}\right)$
45.53	$\dfrac{pq}{p^3q^3+a^3}$	$\dfrac{1}{3a^2}\Big[J_0(2\sqrt{axy}) - \dfrac{\partial}{\partial x}\Big\{I_0(\sqrt{2axy}) \overset{x}{*} \Big[\operatorname{ber}\big(\sqrt{2\sqrt{3}\,axy}\big) - \sqrt{3}\operatorname{bei}\big(\sqrt{2\sqrt{3}\,axy}\big)\Big]\Big\}\Big]$
45.54	$\dfrac{pq}{p^3q^3+ap^2q^2+a^2pq+a^3}$	$\dfrac{1}{2a^2}\left[J_0(2\sqrt{axy}) - \operatorname{ber}(2\sqrt{axy}) + \operatorname{bei}(2\sqrt{axy})\right]$
45.55	$\dfrac{p}{q(p^2q^2+a^2)}$	$\dfrac{\sqrt{y}}{a^2x}\left[\dfrac{1}{\sqrt{2ax}}\operatorname{bei}_1(2\sqrt{axy}) - \dfrac{1}{\sqrt{2ax}}\operatorname{ber}_1(2\sqrt{axy}) - \sqrt{y}\operatorname{ber}_0(2\sqrt{axy})\right] = \dfrac{y}{a^2x}\operatorname{ber}_2(2\sqrt{axy})$
45.56	$\dfrac{p^2q}{p^3q^3+a^3}$	$\dfrac{1}{3a}\Big\{I_0(\sqrt{2axy}) \overset{y}{*} \Big[\operatorname{ber}\big(\sqrt{2a\sqrt{3}\,xy}\big) + \sqrt{3}\operatorname{bei}\big(\sqrt{2a\sqrt{3}\,xy}\big)\Big] - \sqrt{\dfrac{y}{ax}}\,J_1(2\sqrt{axy})\Big\}$

№	$\bar{f}(p, q) = pq\int\limits_0^\infty\int\limits_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
45.57	$\dfrac{p^2}{q(p^2q^2+a^2)}$	$\dfrac{1}{a^2x^2}\Big[2y\,\mathrm{ber}_0(2\sqrt{axy}) + (2-axy)\sqrt{\dfrac{y}{2ax}}\,\mathrm{ber}_1(2\sqrt{axy}) - (2+axy)\sqrt{\dfrac{y}{2ax}} \times \mathrm{bei}_1(2\sqrt{axy})\Big] = \dfrac{1}{\sqrt{2}}\left(\dfrac{y}{ax}\right)^{\frac{3}{2}}[\mathrm{ber}_3(2\sqrt{axy}) + \mathrm{bei}_3(2\sqrt{axy})]$
45.58	$\dfrac{p^2}{q(p^2q^2+a^2)}$	$\dfrac{1}{2}\left(\dfrac{y}{ax}\right)^{3/2}[J_3(2\sqrt{axy}) + I_3(2\sqrt{axy})]$
45.59	$\dfrac{pq(pq-a)}{p^3q^3+a^3}$	$\dfrac{2}{3a}\Big[\dfrac{\partial}{\partial x}\{I_0(\sqrt{2axy}) \overset{x}{\underset{*}{}} \overset{x}{\underset{*}{}}\mathrm{ber}(\sqrt{2a\sqrt{3}xy})\} - J_0(2\sqrt{axy})\Big]$
45.60	$\dfrac{p^2q^2}{p^3q^3+a^3}$	$\dfrac{1}{3a}\Big\{\dfrac{\partial}{\partial x}\Big[I_0(\sqrt{2axy}) \overset{x}{\underset{*}{}} \overset{x}{\underset{*}{}}(\mathrm{ber}(\sqrt{2a\sqrt{3}xy}) + \sqrt{3}\,\mathrm{bei}(\sqrt{2a\sqrt{3}xy}))\Big] - J_0(2\sqrt{axy})\Big\}$
45.61	$\dfrac{p^3q}{p^3q^3+a^3}$	$\dfrac{1}{3}\Big[\dfrac{y}{ax}J_2(2\sqrt{axy}) + 2\sqrt{\dfrac{2y}{ax}}\,I_1(\sqrt{2axy}) \overset{y}{\underset{*}{}} \overset{y}{\underset{*}{}}\mathrm{ber}(\sqrt{2a\sqrt{3}xy})\Big]$

№	$\bar{f}(p, q) = pq\int\limits_0^\infty\int\limits_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
45.62	$\dfrac{p^3q^2}{p^3q^3+a^3}$	$\dfrac{1}{3}\left[\sqrt{\dfrac{y}{ax}}\,J_1(2\sqrt{axy}) + 2I_0(\sqrt{2axy}) \overset{y}{*} \mathrm{ber}\left(\sqrt{2a\sqrt{3}xy}\right)\right]$
45.63	$\dfrac{p^2q(pq-2a)}{p^3q^3+a^3}$	$\sqrt{\dfrac{y}{ax}}\,J_0(2\sqrt{axy}) - \dfrac{2}{\sqrt{3}}\,I_0(\sqrt{2axy}) \overset{y}{*} \mathrm{bei}\left(\sqrt{2a\sqrt{3}xy}\right)$
45.64	$\dfrac{p^3q^3}{p^3q^3+a^3}$	$\dfrac{1}{3}\left\{J_0(2\sqrt{axy}) + 2\dfrac{\partial}{\partial x}\left[I_0(\sqrt{2axy}) \overset{x}{*} \mathrm{ber}\left(\sqrt{2a\sqrt{3}xy}\right)\right]\right\}$
45.65	$\dfrac{pq(p^2q^2+2a^2)}{p^3q^3+a^3}$	$J_0(2\sqrt{axy}) + \dfrac{2}{\sqrt{3}}\dfrac{\partial}{\partial x}\left[I_0(\sqrt{2axy}) \overset{x}{*} \mathrm{bei}\left(\sqrt{2a\sqrt{3}xy}\right)\right]$
45.66	$\dfrac{pq(p^2q^2+2a^2)}{p^3q^3-a^3}$	$I_0(2\sqrt{axy}) - \dfrac{2}{\sqrt{3}}\dfrac{\partial}{\partial x}\left[J_0(\sqrt{2axy}) \overset{x}{*} \mathrm{bei}\left(\sqrt{2a\sqrt{3}xy}\right)\right]$
45.67	$\dfrac{pq(p^2q+q^2+p)}{(p^3-1)(q^3-1)}$	$\dfrac{1}{3}\left[e^{x+y}+\varepsilon e^{\varepsilon x+\varepsilon^2 y}+\varepsilon^2 e^{\varepsilon^2 x+\varepsilon y}\right]$, $\varepsilon = e^{\frac{2\pi i}{3}}$
45.68	$\dfrac{pq(p^2q^2+pq+1)}{(p^3-1)(q^3-1)}$	$\dfrac{1}{3}\left[e^{x+y}+e^{\varepsilon x+\varepsilon^2 y}+e^{\varepsilon^2 x+\varepsilon y}\right]$, $\varepsilon = e^{\frac{2\pi i}{3}}$

№	$\bar{f}(p,\ q) = pq\int\limits_0^\infty\int\limits_0^\infty e^{-px-qy} f(x,\ y)\,dx\,dy$	$f(x,\ y)$
45.69	$\dfrac{p^2q^2(pq-2a)}{p^3q^3+a^3}$	$J_0(2\sqrt{axy}) - \dfrac{2}{\sqrt{3}}\dfrac{\partial}{\partial x}\left[I_0(\sqrt{2axy})\overset{x}{*}\operatorname{bei}\left(\sqrt{2a\sqrt{3xy}}\right)\right]$
45.70	$\dfrac{pq(2p^2q^2-apq-a^2)}{p^3q^3-a^3}$	$2\dfrac{\partial}{\partial x}\left[J_0(\sqrt{2axy})\overset{x}{*}\operatorname{ber}\left(\sqrt{2a\sqrt{3xy}}\right)\right]$
45.71	$\dfrac{q(2p^2q^2-apq-a^2)}{p^3q^3-a^3}$	$2J_0(\sqrt{2axy})\overset{x}{*}\operatorname{ber}\left(\sqrt{2a\sqrt{3xy}}\right)$
45.72	$\dfrac{pq}{p^4q^4+a^4}$	$\dfrac{1}{2\sqrt{2a^3}}\times\left[\dfrac{\operatorname{sh}\sqrt{\sqrt{2axy}}\sin\sqrt{\sqrt{2axy}}}{\sqrt{x}}\overset{x}{*}\dfrac{\operatorname{ch}\sqrt{2\sqrt{2axy}}+\cos\sqrt{2\sqrt{2axy}}}{\sqrt{x}} - \dfrac{\operatorname{ch}\sqrt{\sqrt{2axy}}\cos\sqrt{\sqrt{2axy}}}{\sqrt{x}}\overset{x}{*}\dfrac{\operatorname{ch}\sqrt{2\sqrt{2axy}}-\cos\sqrt{2\sqrt{2axy}}}{\sqrt{x}}\right]$
45.73	$\dfrac{pq}{p^4q^4-a^2}$	$\dfrac{1}{4a^3}\left[I_0(2\sqrt{axy}) - J_0(2\sqrt{axy}) - 2\operatorname{bei}(2\sqrt{axy})\right]$
45.74	$\dfrac{p^2q}{p^4q^4+a^4}$	$\dfrac{1}{2a^2}\operatorname{bei}\left(\sqrt{2a\sqrt{2xy}}\right)\overset{y}{*}\left[I_0\left(\sqrt{2a\sqrt{2xy}}\right) - J_0\left(\sqrt{2a\sqrt{2xy}}\right)\right]$

№	$\bar{f}(p, q) = pq\int\limits_0^\infty\int\limits_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
45.75	$\dfrac{p^2q^2}{p^4q^4+a^4}$	$\dfrac{1}{2\pi a^2}\times\dfrac{\operatorname{sh}\left(\sqrt{a\sqrt{2xy}}\right)\sin\left(\sqrt{a\sqrt{2xy}}\right)}{\sqrt{x}}\overset{x}{*}\left[\dfrac{\operatorname{ch}\left(\sqrt{2a\sqrt{2xy}}\right)}{\sqrt{x}}-\dfrac{\cos\left(\sqrt{2a\sqrt{2xy}}\right)}{\sqrt{x}}\right]$
45.76	$\dfrac{p^2q^2}{p^4q^4-a^4}$	$\dfrac{1}{4a^2}\left[J_0(2\sqrt{axy})+I_0(2\sqrt{axy})-2\operatorname{ber}(2\sqrt{axy})\right]$
45.77	$\dfrac{p^3q}{p^4q^4+a^2}$	$\dfrac{1}{2a\sqrt{2}}\left\{\operatorname{ber}\left(\sqrt{2a\sqrt{2xy}}\right)\overset{y}{*}\sqrt{\dfrac{\sqrt{2y}}{ax}}\left[I_1\left(\sqrt{2a\sqrt{2xy}}\right)-J_1\left(\sqrt{2a\sqrt{2xy}}\right)\right]+\operatorname{bei}\left(\sqrt{2a\sqrt{2xy}}\right)\overset{y}{*}\sqrt{\dfrac{\sqrt{2y}}{ax}}\left[I_1\left(\sqrt{2a\sqrt{2xy}}\right)+J_1\left(\sqrt{2a\sqrt{2xy}}\right)\right]\right\}$
45.78	$\dfrac{p^3q}{p^4q^4-a^4}$	$\dfrac{y}{4a^2x}\left[I_2(2\sqrt{axy})-J_2(2\sqrt{axy})+2\operatorname{ber}_2(2\sqrt{axy})\right]$

№	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
45.79	$\dfrac{p^3q^3}{p^4q^4+a^4}$	$\dfrac{1}{2\sqrt{2}\,a\pi}\times\left\{\left[\dfrac{\operatorname{ch}\left(\sqrt{\sqrt{2axy}}\right)}{\sqrt{x}}\times\dfrac{\cos\left(\sqrt{2\sqrt{2axy}}\right)}{\sqrt{x}}\right]\overset{x}{*}\left[\dfrac{\operatorname{ch}\left(\sqrt{2\sqrt{2axy}}\right)}{\sqrt{x}}-\dfrac{\cos\left(\sqrt{2\sqrt{2axy}}\right)}{\sqrt{x}}\right]+\dfrac{\operatorname{sh}\left(\sqrt{\sqrt{2axy}}\right)\sin\left(\sqrt{\sqrt{2axy}}\right)}{\sqrt{x}}\overset{x}{*}\left[\dfrac{\operatorname{ch}\left(\sqrt{2\sqrt{2axy}}\right)}{\sqrt{x}}+\dfrac{\cos\left(\sqrt{2\sqrt{2axy}}\right)}{\sqrt{x}}\right]\right\}$
45.80	$\dfrac{pq\,(p^2q^2+a^2)}{p^4q^4+a^4}$	$\dfrac{1}{\sqrt{2}a\pi}\times\dfrac{\operatorname{sh}\left(\sqrt{\sqrt{2axy}}\right)\sin\left(\sqrt{\sqrt{2axy}}\right)}{\sqrt{x}}\overset{x}{*}\left[\dfrac{\operatorname{ch}\left(\sqrt{2\sqrt{2axy}}\right)}{\sqrt{x}}+\dfrac{\cos\left(\sqrt{2\sqrt{2axy}}\right)}{\sqrt{x}}\right]$

№	$\bar{f}(p, q) = pq \int\limits_0^\infty \int\limits_0^\infty e^{-px-qy} f(x, y)\, dx\, dy$	$f(x, y)$
45.81	$\frac{pq(p^2q^2-a^2)}{p^4q^4+a^4}$	$\frac{1}{\sqrt{2a\pi}} \times \frac{\operatorname{ch}(\sqrt{\sqrt{2axy}})\cos(\sqrt{\sqrt{2axy}})}{\sqrt{x}} * \left[\frac{\operatorname{ch}(\sqrt{2\sqrt{2axy}})}{\sqrt{x}} - \frac{\cos(\sqrt{2\sqrt{2axy}})}{\sqrt{x}}\right]$
45.82	$\frac{pq(p^2q^2+a^2)}{(p^2q^2-a^2)^2}$	$\frac{1}{2}\sqrt{\frac{xy}{a}}\,[J_1(2\sqrt{axy}) + I_1(2\sqrt{axy})]$
45.83	$\left(1-\frac{1}{p}-\frac{1}{q}\right)^{-1}$	$e^{x+y} J_0(2i\sqrt{xy})$
45.84	$\frac{pq}{p^nq+a},\ n>0$	$\frac{x^{n-1}}{(n-1)!}\, {}_0F_n\left(1,\ 1+\frac{1}{n},\ 1+\frac{2}{n}, \ldots, 1+\frac{n-1}{n};\ -\frac{ax^ny}{n^n}\right)$
45.85	$\frac{pq}{(pq+1)^{n+1}}$	$\frac{(xy)^{\frac{n}{2}}}{\Gamma(n+1)} J_n(2\sqrt{xy})$
45.86	$\frac{m!}{p^mq^m}\left(\frac{q^{m+1}-p^{m+1}}{q-p}\right)$	$(x+y)^m$
45.87	$\frac{p^nq}{p^nq+n},\ n>0$	${}_0F_n\left(\frac{1}{n},\ \frac{2}{n}, \ldots \frac{n-1}{n},\ 1;\ -\frac{ax^ny}{n^n}\right)$
45.88	$\frac{p^{n-m+1}q}{p^nq+a};\ m,\ n>0$	$\frac{x^{m-1}}{(m-1)!}\, {}_0F_n\left(\frac{m}{n},\ \frac{m+1}{n}, \ldots, \frac{m+n-1}{n};\ -\frac{ax^ny}{n^n}\right)$

№	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
45.89	$\dfrac{q}{p^{n-3}(p^3q+a)}$	$\dfrac{x^n}{n!}\,{}_0F_3\left(\dfrac{n+1}{n}, \dfrac{n+2}{n}, \dfrac{n+3}{n}; -\dfrac{ax^3y}{27}\right)$
45.90	$\dfrac{q}{p^{4n-1}(p^2q^2+a^2)}$	$\dfrac{(-1)^n}{a}\left(\dfrac{x}{ay}\right)^{2n}\operatorname{bei}_{4n}(2\sqrt{axy})$
45.91	$\dfrac{q^2}{p^{4n-2}(p^2q^2+a^2)}$	$(-1)^n\left(\dfrac{x}{ay}\right)^{2n}\operatorname{ber}_{4n}(2\sqrt{axy})$
45.92	$\dfrac{q(pq+a)}{p^{4n}(p^2q^2+a^2)}$	$(-1)^{n+1}\sqrt{2}\left(\dfrac{x}{ay}\right)^{2n+\frac{1}{2}}\times$ $\times\operatorname{ber}_{4n+1}(2\sqrt{axy})$
45.93	$\dfrac{q(pq-a)}{p^{4n}(p^2q^2+a^2)}$	$(-1)^n\sqrt{2}\left(\dfrac{x}{ay}\right)^{2n+\frac{1}{2}}\times$ $\times\operatorname{bei}_{4n+1}(2\sqrt{axy})$
45.94	$\dfrac{q}{p^{4n+1}(p^2q^2+a^2)}$	$\dfrac{(-1)^n}{a}\left(\dfrac{x}{ay}\right)^{2n+1}\operatorname{ber}_{4n+2}(2\sqrt{axy})$
45.95	$\dfrac{q^2}{p^{4n}(p^2q^2+a^2)}$	$(-1)^{n+1}\left(\dfrac{x}{ay}\right)^{2n+1}\operatorname{bei}_{4n+2}(2\sqrt{axy})$
45.96	$\dfrac{q(pq+a)}{p^{4n+2}(p^2q^2+a^2)}$	$(-1)^n\sqrt{2}\left(\dfrac{x}{ay}\right)^{2n+\frac{3}{2}}\times$ $\times\operatorname{bei}_{4n+3}(2\sqrt{axy})$
45.97	$\dfrac{q(pq-a)}{p^{4n+2}(p^2q^2+a^2)}$	$(-1)^n\sqrt{2}\left(\dfrac{x}{ay}\right)^{2n+\frac{3}{2}}\times$ $\times\operatorname{ber}_{4n+3}(2\sqrt{axy})$
45.98	$\dfrac{pq^{m-n+1}}{(pq+1)^{m+1}}$	$\dfrac{x^{m-\frac{n}{2}}y^{\frac{n}{2}}}{\Gamma(m+1)}J_n(2\sqrt{xy})$

№	$\bar{f}(p, q) = pq \int_0^\infty \int_0^\infty e^{-px-qy} f(x, y)\, dx\, dy$	$f(x, y)$
45.99	$\dfrac{pq}{(pq)^n + a^n}$	$\dfrac{1}{na^{n-1}} \sum_{k=0}^{n-1} \dfrac{I_0\left(2\varepsilon^{k+\frac{1}{2}} \sqrt{axy}\right)}{\varepsilon^{(n-1)(2k+1)}}$, $\varepsilon = e^{\frac{\pi i}{n}}$
45.100	$\dfrac{(pq)^{n-m+1}}{(pq)^n + a^n}$, $0 < m \leqslant n$	$\dfrac{1}{na^{m-1}} \sum_{k=0}^{n-1} \dfrac{I_0\left(2\varepsilon^{k+\frac{1}{2}} \sqrt{axy}\right)}{\varepsilon^{(m-1)(2k+1)}}$, $\varepsilon = e^{\frac{\pi i}{n}}$
45.101	$\dfrac{p^2q^2}{(pq)^n + a^n}$	$\dfrac{1}{na^{n-2}} \sum_{k=0}^{n-1} \dfrac{I_0\left(2\varepsilon^{k+\frac{1}{2}} \sqrt{axy}\right)}{\varepsilon^{(n-2)(2k+1)}}$, $\varepsilon = e^{\frac{\pi i}{n}}$
45.102	$\dfrac{(pq)^{n-m+1}}{(pq)^n - a^n}$, $0 < m \leqslant n$	$\dfrac{1}{na^{m-1}} \sum_{k=0}^{n-1} \dfrac{I_0\left(2\varepsilon^{\frac{k}{2}} \sqrt{axy}\right)}{\varepsilon^{(m-1)k}}$, $\varepsilon = e^{\frac{2\pi i}{n}}$
45.103	$\dfrac{(pq)^n}{(pq)^n + a^n}$	$\dfrac{1}{n} \sum_{k=0}^{n-1} I_0\left(2\varepsilon^{k+\frac{1}{2}} \sqrt{axy}\right)$, $\varepsilon = e^{\frac{\pi i}{n}}$
45.104	$\dfrac{pq}{p^m q^n + a}$	$\dfrac{x^{m-1} y^{n-1}}{(m-1)!\,(n-1)!}\, {}_1F_{m+n}\left(1;\ 1,\ 1+\dfrac{1}{m}, \ldots, 2-\dfrac{1}{m},\ 1,\ 1+\dfrac{1}{n}, \ldots, 2-\dfrac{1}{n};\ -a\dfrac{x^m y^n}{m^m n^n}\right)$

№	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
45.105	$\dfrac{pq}{p^m q^n + a^m}$	$\dfrac{x^{\frac{m}{n}-1}}{na^{m\left(1-\frac{1}{n}\right)}} \times \sum_{k=0}^{\infty} \dfrac{\left(a^{\frac{m}{n}} x^{\frac{m}{n}} y\right)^k \varepsilon^{k-n+1}}{k!\,\Gamma\left[\frac{m}{n}(k+1)\right]} \times \dfrac{1-\varepsilon^{2n(k-n+1)}}{1-\varepsilon^{2(k-n+1)}}$; $\varepsilon = e^{\frac{\pi i}{n}}$
45.106	$\dfrac{pq}{p^m q^n - a^m}$	$\dfrac{x^{\frac{m}{n}-1}}{na^{m\left(1-\frac{1}{n}\right)}} \times \sum_{k=0}^{\infty} \dfrac{\left(a^{\frac{m}{n}} x^{\frac{m}{n}} y\right)^k \left(1-\varepsilon^{n(k-n+1)}\right)}{k!\,\Gamma\left[\frac{m}{n}(k+1)\right]\left(1-\varepsilon^{k-n+1}\right)}$; $\varepsilon = e^{\frac{2\pi i}{n}}$

§ 46. Иррациональные функции

№	$\bar{f}(p, q)$	$f(x, y)$
46.1	$\dfrac{1}{p^\nu q^\nu}$	$\dfrac{(xy)^\nu}{\Gamma^2(1+\nu)}$, $\operatorname{Re}\nu > -1$
46.2	$\dfrac{pq}{(pq+a)^\nu}$	$\dfrac{(xy)^{\frac{\nu-1}{2}}}{\Gamma(\nu)\, a^{\frac{\nu-1}{2}}} J_{\nu-1}(2\sqrt{axy})$ $\operatorname{Re}\nu > 0$
46.3	$\dfrac{1}{p^\nu}\left(\dfrac{pq}{p^2q^2+1}\right)$	$\left(\dfrac{x}{y}\right)^{\frac{\nu}{2}}\left[\operatorname{bei}_\nu(2\sqrt{xy})\cos\left(\dfrac{3\nu\pi}{4}\right) - \operatorname{ber}_\nu(2\sqrt{xy})\sin\left(\dfrac{3\nu\pi}{4}\right)\right]$

№	$\bar{f}(p, q) = pq\int\limits_0^\infty\int\limits_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
46.4	$\frac{1}{p^\nu}\left(\frac{p^2q^2}{p^2q^2+1}\right)$	$\left(\frac{x}{y}\right)^{\frac{\nu}{2}}\left[\operatorname{ber}_\nu(2\sqrt{xy})\cos\left(\frac{3\nu\pi}{4}\right)+\right.$ $\left.+\operatorname{bei}_\nu(2\sqrt{xy})\sin\left(\frac{3\nu\pi}{4}\right)\right]$
46.5	$\sqrt{\frac{pq}{pq+a}}\left(\frac{\sqrt{pq+a}-\sqrt{pq}}{\sqrt{a}}\right)^\nu$	$\left[J_{\frac{\nu}{2}}(\sqrt{axy})\right]^2$
46.6	$\frac{pq}{(p^2q^2-1)^\nu}[(pq+1)^\nu+(pq-1)^\nu]$	$\frac{(xy)^{\frac{\nu-1}{2}}}{\Gamma(\nu)}[J_{\nu-1}(2\sqrt{xy})+$ $+I_{\nu-1}(2\sqrt{xy})]$ $\operatorname{Re}\nu>0$
46.7	$\frac{pq}{(p^2q^2-1)^\nu}[(pq+1)^\nu-(pq-1)^\nu]$	$\frac{(xy)^{\frac{\nu-1}{2}}}{\Gamma(\nu)}[I_{\nu-1}(2\sqrt{xy})-$ $-J_{\nu-1}(2\sqrt{xy})]$ $\operatorname{Re}\nu>0$
46.8	$\frac{pq}{\sqrt{p^2q^2+a^2}}(\sqrt{p^2q^2+a^2}-pq)^\nu$	$a^\nu J_\nu(2\sqrt{axy})\,I_\nu(2\sqrt{axy})$
46.9	$\frac{p^2q^2\cos\left(\frac{3\nu\pi}{4}\right)-apq\sin\left(\frac{3\nu\pi}{4}\right)}{p^\nu(p^2q^2+a^2)}$ $\operatorname{Re}\nu>-1$	$\left(\frac{x}{ay}\right)^{\frac{\nu}{2}}\operatorname{ber}_\nu(2\sqrt{axy})$
46.10	$\frac{p^2q^2\sin\left(\frac{3\nu\pi}{4}\right)+apq\cos\left(\frac{3\nu\pi}{4}\right)}{p^\nu(p^2q^2+a^2)}$ $\operatorname{Re}\nu>-1$	$\left(\frac{x}{ay}\right)^{\frac{\nu}{2}}\operatorname{bei}_\nu(2\sqrt{axy})$
46.11	$\frac{pq^{\nu+1}}{p+\sqrt{q}}$, $\operatorname{Re}\nu<\frac{1}{2}$	$\sqrt{\frac{2}{\pi}}\frac{\exp\left(-\frac{x^2}{8y}\right)}{(2y)^{\nu+1}}D_{2\nu+1}\left(\frac{x}{\sqrt{2y}}\right)$
46.12	$\frac{q}{p^{\nu-1}(p+q)}$, $\operatorname{Re}\nu>0$	0 при $y>x$ $\frac{(x-y)^{\nu-1}}{\Gamma(\nu)}$ при $y<x$

№	$\overline{f}(p, q)= = pq\int\limits_0^\infty\int\limits_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
46.13	$\dfrac{q}{p^{\nu-1}(pq+a)}$, $\operatorname{Re}\nu>-1$	$\left(\dfrac{x}{ay}\right)^{\frac{\nu}{2}} J_\nu(2\sqrt{axy})$
46.14	$\dfrac{q}{p^{\nu-1}(p^2q^2+a^2)}$, $\operatorname{Re}\nu>-2$	$\dfrac{1}{a}\left(\dfrac{x}{ay}\right)^{\frac{\nu}{2}}\left[\cos\left(\dfrac{3\nu\pi}{4}\right)\times \times\operatorname{bei}_\nu(2\sqrt{axy})-\sin\left(\dfrac{3\nu\pi}{4}\right)\times \times\operatorname{ber}_\nu(2\sqrt{axy})\right]$
46.15	$\dfrac{q}{p^{\nu-1}(p^2q^2-a^2)}$ $\operatorname{Re}\nu>-2$	$\dfrac{1}{2a}\left(\dfrac{x}{ay}\right)^{\frac{\nu}{2}}[I_\nu(2\sqrt{axy})- -J_\nu(2\sqrt{axy})]$
46.16	$\dfrac{p^2q^2}{p^\nu(p^2q^2+a^2)}$, $\operatorname{Re}\nu>-1$	$\left(\dfrac{x}{ay}\right)^{\frac{\nu}{2}}\left[\cos\left(\dfrac{3\nu\pi}{4}\right)\operatorname{ber}_\nu(2\sqrt{axy})+ +\sin\left(\dfrac{3\nu\pi}{4}\right)\operatorname{bei}_\nu(2\sqrt{axy})\right]$
46.17	$\dfrac{p^2q^2}{p^\nu(p^2q^2-a^2)}$, $\operatorname{Re}\nu>-1$	$\dfrac{1}{2}\left(\dfrac{x}{ay}\right)^{\frac{\nu}{2}}[J_\nu(2\sqrt{axy})+ +I_\nu(2\sqrt{axy})]$
46.18	$\dfrac{pq}{[(p+1)(q+1)+apq]^\nu}$ $\operatorname{Re}\nu>0,\ \|a\|<1$	$\dfrac{e^{-\frac{x+y}{a+1}}}{\Gamma(\nu)(a+1)}\left(\dfrac{xy}{a}\right)^{\frac{\nu-1}{2}}\times \times J_{\nu-1}\left(\dfrac{2\sqrt{axy}}{a+1}\right)$
46.19	$\dfrac{p}{(p+q)^\nu}$, $\operatorname{Re}\nu>0$	$\dfrac{x^{\nu-1}}{\Gamma(\nu)}$ при $y>x$ 0 при $y<x$

№	$\bar{f}(p,q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x,y)\,dx\,dy$	(x, y)
46.20	$\frac{1}{(p+q)^\nu}$, $\operatorname{Re}\nu > -1$	$\frac{x^\nu}{\Gamma(\nu+1)}$ при $y > x$ $\frac{y^\nu}{\Gamma(\nu+1)}$ при $y < x$
46.21	$\frac{1}{(p+q+a)^\nu}$, $\operatorname{Re}\nu > 0$	$\int_0^x e^{-a\xi}\frac{\xi^{\nu-1}}{\Gamma(\nu)}\,d\xi$ при $y > x$ $\int_0^y e^{-a\eta}\frac{\eta^{\nu-1}}{\Gamma(\nu)}\,d\eta$ при $y < x$
46.22	$\frac{q}{p^{n-1}(pq+a)^\nu}$, $\operatorname{Re}\nu > 0$	$\frac{y^{\nu-1}}{\Gamma(\nu)}\left(\frac{x}{ay}\right)^{\frac{\nu+n-1}{2}} J_{\nu+n-1}(2\sqrt{axy})$
46.23	$\frac{q}{p^{\nu-1}(pq+1)^\nu}$, $\operatorname{Re}\nu > 0$	$\frac{1}{\Gamma(\nu)}\frac{x^\nu}{\sqrt{xy}} J_{2\nu-1}(2\sqrt{xy})$
46.24	$\frac{q}{p^{\nu-1}(pq+1)^{\nu+1}}$, $\operatorname{Re}\nu > -\frac{1}{2}$	$\frac{x^\nu}{\Gamma(\nu+1)} J_{2\nu}(2\sqrt{xy})$
46.25	$\frac{pq}{p^{\nu+n}(pq+1)^{\nu+1}}$, $\operatorname{Re}\nu > -1$ при $n = 1, 2, 3, \ldots$ $\operatorname{Re}\nu > -\frac{1}{2}$ при $n = 0$	$\frac{x^\nu}{\Gamma(\nu+1)}\left(\frac{x}{y}\right)^{\frac{n}{2}} J_{2\nu+n}(2\sqrt{xy})$
46.26	$\frac{1}{p^{\mu-1}q^{\nu-1}}$, $\operatorname{Re}\mu,\ \nu > 0$	$\frac{x^{\mu-1}y^{\nu-1}}{\Gamma(\mu)\Gamma(\nu)}$
46.27	$\frac{pq}{(p-a)^\mu(q-b)^\nu}$ $\operatorname{Re}\mu,\ \nu > 0$	$e^{ax+by}\frac{x^{\mu-1}y^{\nu-1}}{\Gamma(\mu)\Gamma(\nu)}$

№	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
46.28	$\left[\frac{1}{p^\nu} - \frac{1}{(p+q)^\nu} + \frac{1}{q^\nu}\right]$	$\frac{y^\nu}{\Gamma(\nu+1)}$ при $y > x$ $\frac{x^\nu}{\Gamma(\nu+1)}$ при $y < x$
46.29	$\frac{p^\nu + q^\nu}{(pq)^\nu}$, $\operatorname{Re}\nu > -1$	$\frac{x^\nu + y^\nu}{\Gamma(\nu+1)}$
46.30	$\frac{p^\nu q}{(pq+a)^\nu}$, $\operatorname{Re}\nu > 0$	$\frac{y^{\nu-1}}{\Gamma(\nu)} J_0(2\sqrt{axy})$
46.31	$\frac{p^\nu - q^\nu}{p^{\nu-1}q^{\nu-1}(p-q)}$, $\operatorname{Re}\nu > 0$	$\frac{(x+y)^{\nu-1}}{\Gamma(\nu)}$
46.32	$[(p+\sqrt{p^2-q})^\nu - (p-\sqrt{p^2-q})^\nu] \times$ $\times \frac{pq}{\sqrt{p^2-q}}$, $\lvert\operatorname{Re}\nu\rvert < 1$	$\frac{\sin(\nu\pi)}{2^\nu\pi} \frac{x^\nu \exp\left(-\frac{x^2}{4y}\right)}{y^{\nu+1}}$
46.33	$[(p+\sqrt{p^2-q^2})^\nu - (p-\sqrt{p^2-q^2})^\nu] \times$ $\times \frac{pq}{q^\nu\sqrt{p^2-q^2}}$, $\lvert\operatorname{Re}\nu\rvert < 1$	$\frac{\sin(\nu\pi)}{\pi} \times$ $\times \frac{(y+\sqrt{y^2-x^2})^\nu + (y-\sqrt{y^2-x^2})^\nu}{x^\nu\sqrt{y^2-x^2}}$ при $y > x$ 0 при $y < x$
46.34	$\frac{pq[1+(q-1)p]^n}{p^{\nu-\alpha}(pq+1)^{n+\alpha+1}}$ $\operatorname{Re}\nu, \alpha > -1$	$\frac{n!\, y^\alpha}{\Gamma(n+\alpha+1)} \left(\frac{x}{y}\right)^{\frac{\nu}{2}} \times$ $\times J_\nu(2\sqrt{xy}) L_n^{(\alpha)}(y)$
46.35	$\frac{\sqrt{pq}}{(\sqrt{p}+\sqrt{q})^{\nu+1}}$	$\frac{(xy)^{\frac{\nu}{2}}}{\sqrt{\pi}\,\Gamma\left(\frac{\nu}{2}+1\right)(x+y)^{\frac{\nu+1}{2}}}$

№	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
46.36	$\frac{1}{p^\alpha q^\beta}\left(1-\frac{1}{p}-\frac{1}{q}\right)^m$	$\frac{(m!)^2 x^\alpha y^\beta L_m^{\alpha,\beta}(x, y)}{\Gamma(m+\alpha+1)\,\Gamma(m+\beta+1)}$ *)
46.37	$\sqrt{pq}\left(\frac{1}{p}+\frac{1}{q}-1\right)^m$	$\frac{m!}{\pi(2m)!}\frac{H_{2m}(\sqrt{x}, \sqrt{y})}{\sqrt{xy}}$ *)
46.38	$\frac{1}{\sqrt{pq}}\left(\frac{1}{p}+\frac{1}{q}-1\right)^m$	$\frac{m!}{\pi(2m+1)!}H_{2m+1}(\sqrt{x}, \sqrt{y})$ *)
46.39	$\left(1-\frac{1}{2p}-\frac{1}{2q}\right)^m$	$L_m\left(\frac{x}{2}, \frac{y}{2}\right)$ *)
46.40	$\frac{\sqrt{pq}}{(\sqrt{p}+\sqrt{q})^{\nu+1}}$	$\frac{(xy)^{\frac{\nu}{2}}}{\sqrt{\pi}\,\Gamma\left(\frac{\nu}{2}+1\right)(x+y)^{\frac{\nu+1}{2}}}$
46.41	$\frac{\Gamma(2n+2)\,\pi pq^{n+1}}{\Gamma(n+1)\,(4pq+1)^{n+\frac{3}{2}}}$	$x^n\sin(\sqrt{xy})$
46.42	$\frac{2\,\Gamma(2n+1)\,\pi pq^{n+1}}{\Gamma(n+1)\,(4pq+1)^{n+\frac{1}{2}}}$	$\frac{x^n\cos(\sqrt{xy})}{\sqrt{xy}}$
46.43	$\left(\frac{q}{p}\right)^\alpha\frac{\sqrt{pq}}{\sqrt{pq+1}}$	$\left(\frac{x}{y}\right)^\alpha J_\alpha(\sqrt{xy})\,J_{-\alpha}(\sqrt{xy})$
46.44	$\frac{p^{\frac{1}{2}}q^{\frac{1}{2}-\alpha}}{(pq+1)^{\frac{1}{2}+\alpha}}$	$\frac{\sqrt{\pi}}{\Gamma\left(\frac{1}{2}+\alpha\right)}y^\alpha\,[J_\alpha(\sqrt{xy})]^2$

*) Здесь $L_m(x, y)$, $H_m(x, y)$, $L_m^{\alpha,\beta}(x, y)$ введены по аналогии с общепринятыми обозначениями соответствующих многочленов одного переменного

№	$\bar{f}(p, q) = pq \int\limits_0^\infty \int\limits_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
46.45	$\dfrac{1}{p^{\mu-k} q^{\nu-k} (p+q)^k}$	$\dfrac{x^{\mu-k} y^{\nu}}{\Gamma(\mu-k)\Gamma(\nu-1)} \times$ $\times {}_2F_1\left(k, k-\mu; \nu+1; \dfrac{y}{x}\right)$ при $y > x$ $\dfrac{x^{\mu} y^{\nu-k}}{\Gamma(\mu+1)\Gamma(\nu-k)} \times$ $\times {}_2F_1\left(k, k-\nu; \mu+1; \dfrac{x}{y}\right)$ при $y < x$
46.46	$\dfrac{p}{(p+q)(q+a\sqrt{q})}$, $\operatorname{Re} a > 0$	$\dfrac{2}{a\sqrt{\pi}}\sqrt{y-x} -$ $-\dfrac{1}{a}\int\limits_x^y \chi[a(\eta-x), y-\eta]\,d\eta$ при $y > x$ 0 при $y < x$
46.47	$\dfrac{p\sqrt{q}}{(p+q)(q+a\sqrt{q})}$, $\operatorname{Re} a > 0$	$\int\limits_x^y \chi[a(\eta-x), y-\eta]\,d\eta$ при $y > x$ 0 при $y < x$
46.48	$\dfrac{1}{(p+a\sqrt{p})\,q}$, $\operatorname{Re} a > 0$	$\dfrac{2}{a\sqrt{\pi}}\,y\sqrt{x} - \dfrac{y}{a}\int\limits_0^x \chi(a\xi, x-\xi)\,d\xi$
46.49	$\dfrac{1}{\sqrt{(p+q)^2+1}}$	$\int\limits_0^x J_0(\xi)\,d\xi$ при $y > x$ $\int\limits_0^y J_0(\eta)\,d\eta$ при $y < x$
46.50	$\dfrac{p}{(p+q)\sqrt{(p+q)^2+1}}$	$\int\limits_0^x J_0(\xi)\,d\xi$ при $y > x$ 0 при $y < x$

§ 47. Показательные функции

№	$\bar{f}(p, q) = pq \int_0^\infty \int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
47.1	$e^{\frac{1}{pq}}$	$J^{(2)}_{0,0}\left(-3\sqrt[3]{xy}\right)$
47.2	$e^{-\frac{1}{pq}}$	$J^{(2)}_{0,0}\left(3\sqrt[3]{xy}\right)$
47.3	$e^{-\frac{1}{p+q}}$	$\begin{cases} J_0(2\sqrt{x}) & \text{при} \quad y > x \\ J_0(2\sqrt{y}) & \text{при} \quad y < x \end{cases}$
47.4	$\dfrac{q\left(e^{-\frac{1}{p}} - e^{-\frac{1}{q}}\right)}{p-q}$	$J_0(2\sqrt{y}) - J_0(2\sqrt{x+y})$
47.5	$\dfrac{pe^{-\frac{1}{q}} - qe^{-\frac{1}{p}}}{p-q}$	$J_0(2\sqrt{x+y})$
47.6	$\sqrt{p}\, e^{-\sqrt{pq}}$	$\dfrac{1}{\sqrt{\pi x}}$ при $y > \dfrac{1}{4x}$ 0 при $y < \dfrac{1}{4x}$
47.7	$\dfrac{1}{\sqrt{p}} \dfrac{e^{-\frac{1}{\sqrt{pq}}}}{(pq)^{\nu-1}}$, $\operatorname{Re} \nu > 0$	$\dfrac{(4xy)^{\frac{2\nu-1}{4}}}{\sqrt{\pi y}} J_{2\nu-1}\left[2(4xy)^{\frac{1}{4}}\right]$
47.8	$\dfrac{pe^{-p}}{p + \ln q}$	$\dfrac{y^{x-1}}{\Gamma(x)}$ при $x > 1$ 0 при $x < 1$
47.9	$\dfrac{p}{q^n}\left(\dfrac{q - e^{-p}}{p + \ln q}\right)$, $n > 0$	0 при $x > 1$ $\dfrac{y^{x+n-1}}{\Gamma(x+n)}$ при $x < 1$
47.10	$\dfrac{1}{(pq)^{n-1}} e^{-\frac{1}{pq}}$	$(xy)^{\frac{n-1}{3}} J^{(2)}_{n-1,\,n-1}\left(3\sqrt[3]{xy}\right)$

№	$\bar f(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
47.11	$-\frac{1}{(pq)^n}\ln(pq)\,e^{-\frac{1}{pq}}$	$\frac{1}{3}(xy)^{\frac{n}{3}}\ln(xy)\,J^{(2)}_{n,\,n}\left(3\sqrt[3]{xy}\right)+ (xy)^{\frac{n}{3}}\frac{d}{dn}J^{(2)}_{n,\,n}\left(3\sqrt[3]{xy}\right)$
47.12	$\frac{e^{-\frac{1}{pq}}}{p^m q^n}$	$x^{\frac{2m-n}{3}}y^{\frac{2n-m}{3}}J^{(2)}_{m,\,n}\left(3\sqrt[3]{xy}\right)$
47.13	$p^{\frac{1}{4}-\mu}\sqrt{q}\,e^{-2\sqrt{q\sqrt{p}}}$	$\frac{2^{\mu-\frac{1}{4}}}{\pi}x^{\mu-\frac{1}{4}}y^{-\frac{1}{2}}e^{-\frac{1}{2xy^2}}\times D_{-2\mu-\frac{1}{2}}\left(\sqrt{\frac{2}{xy^2}}\right)$
47.14	$\frac{(m+1)pq-1}{p^{m+2}q^{n+1}}e^{-\frac{1}{pq}}$	$x^{\frac{2m-n}{3}+1}y^{\frac{2n-m}{3}}J^{(2)}_{m,\,n}\left(3\sqrt[3]{xy}\right)$

§ 48. Логарифмические функции

48.1	$\frac{pq}{p-q}\ln\frac{q}{p}$	$\frac{1}{x+y}$
48.2	$\ln(p+q)$	$\Gamma'(1)-\ln x$ при $y>x$ $\Gamma'(1)-\ln y$ при $y<x$
48.3	$\ln(p+q+1)$	$-\mathrm{Ei}(-x)$ при $y>x$ $-\mathrm{Ei}(-y)$ при $y<x$
48.4	$\ln pq$	$2\Gamma'(1)-\ln(xy)$
48.5	$\ln(pq+a)$	$2Ji_0(2\sqrt{axy})+\ln a$
48.6	$\frac{p\ln(p+q)}{p+q}$	$\Gamma'(1)-\ln x$ при $y>x$ 0 при $y<x$
48.7	$\frac{q\ln p-p\ln q}{p-q}$	$\ln(x+y)-\Gamma'(1)$

№	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
48.8	$\dfrac{q}{p^{n-1}\ln pq}$	$x^n\int_0^\infty \dfrac{(xy)^{\xi-1}}{\Gamma(\xi)\,\Gamma(\xi+n)}\,d\xi$
48.9	$\dfrac{q}{\ln pq}$	$x\int_0^\infty \dfrac{(xy)^{\xi-1}}{\Gamma(\xi)\,\Gamma(\xi+1)}\,d\xi$
48.10	$\dfrac{p}{p+\ln q}$	$\dfrac{y^x}{\Gamma(x+1)}$
48.11	$\dfrac{p}{q(p+\ln q)}$	$\dfrac{y^{x+1}}{\Gamma(x+2)}$
48.12	$\dfrac{p}{q^n(p+\ln q)}$	$\dfrac{y^{x+n}}{\Gamma(x+n+1)}$
48.13	$\dfrac{pq}{(p+\ln q)^2}$	$\dfrac{xy^{x-1}}{\Gamma(x)}$
48.14	$\dfrac{p}{(p+\ln q)^2}$	$\dfrac{y^x}{\Gamma(x)}$
48.15	$\dfrac{p}{(p+\ln q)^{n+1}}$	$\dfrac{x^n y^x}{n!\,\Gamma(x+1)}$
48.16	$\dfrac{p}{q^n(p+\ln q)^{m+1}}$	$\dfrac{x^m y^{x+n}}{m!\,\Gamma(x+n+1)}$
48.17	$\dfrac{pq}{pq-a}\ln\sqrt{\dfrac{pq}{a}}$	$K_0(2\sqrt{axy})$
48.18	$\dfrac{\ln pq}{(pq)^\nu}$	$\dfrac{(xy)^\nu}{[\Gamma(\nu+1)]^2}\left[2\dfrac{\Gamma'(\nu+1)}{\Gamma(\nu+1)}-\ln xy\right]$
48.19	$pq\ln\dfrac{pq+a}{pq-a}$	$\sqrt{\dfrac{a}{xy}}\,[J_1(2\sqrt{axy})-I_1(2\sqrt{axy})]$

§ 49. Гиперболические и обратные гиперболические функции

№	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
49.1	$\frac{pq}{\sqrt{p^2+q^2}} \operatorname{Arth}\left(\frac{\sqrt{p^2+q^2}}{p+q}\right)$	$\frac{1}{2\sqrt{x^2+y^2}}$
49.2	$\frac{pq}{\sqrt{p^2-q^2}} \operatorname{sh}\left(\nu \operatorname{Arch}\frac{p}{q}\right)$ $\lvert \operatorname{Re}\nu \rvert < 1$	$\frac{\sin(\nu\pi)}{\pi} \frac{\operatorname{ch}\left(\nu \operatorname{Arch}\frac{y}{x}\right)}{\sqrt{y^2-x^2}}$ при $y > x$ 0 при $y < x$
49.3	$\frac{pq^{\frac{\nu}{2}+1}}{\sqrt{p^2-q}} \operatorname{sh}\left(\nu \operatorname{Arch}\frac{p}{\sqrt{q}}\right)$ $\lvert \operatorname{Re}\nu \rvert < 1$	$\frac{\sin(\nu\pi)}{\pi} \frac{x^\nu e^{-\frac{x^2}{4y}}}{(2y)^{\nu+1}}$
49.4	$\frac{pqe^{-(p+q)}}{(p-a)(p-q-a)} \operatorname{sh}(p-q-a)$	$\frac{1}{2} e^{a(x-1)}$ при $2-x<y<2$ 0 в остальных случаях
49.5	$\frac{qe^{-(p+q)}}{p-q+a} \operatorname{sh}(p-q+a)$	$\frac{1}{2} e^{a(y-1)}$ при $2-x<y<2$ 0 в остальных случаях
49.6	$\sqrt{q}\, e^{-\sqrt{pq}} \operatorname{sh}\sqrt{pq}$	0 при $y > \frac{1}{x}$ $\frac{1}{2\sqrt{\pi y}}$ при $y < \frac{1}{x}$
49.7	$\frac{p\sqrt{q}}{p^2-q}\left[\frac{p}{\operatorname{sh}\sqrt{q}} - \frac{\sqrt{q}}{\operatorname{sh} p}\right]$	$\vartheta_0\left(\frac{x}{2}, y\right) = \vartheta_3\left(\frac{x+1}{2}, y\right)$
49.8	$\frac{p^2q^2}{p+\operatorname{Arsh} q}$, $\operatorname{Re}(p+\operatorname{Arsh} q) > 0$	$\frac{x}{y} J_x(y)$ при $x>0$, $y>0$ 0 в остальных случаях
49.9	$\frac{pq(\sqrt{p}+\sqrt{q})^3}{(\sqrt{p}+\sqrt{q})^4-1}$	$\frac{\operatorname{ch}\frac{xy}{x+y} + \frac{2xy}{x+y}\operatorname{sh}\frac{xy}{x+y}}{2\sqrt{\pi}(x+y)^{\frac{3}{2}}}$

§ 50. Цилиндрические функции

№	$\bar{f}(p,q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x,y)\,dx\,dy$	$f(x,y)$
50.1	$\sqrt{pq}\, I_0(2\sqrt[4]{pq})$	$\frac{1}{\sqrt{\pi xy}} I_0\left(\frac{1}{2\sqrt{xy}}\right)$
50.2	$pq\,[\mathbf{H}_0(\sqrt{pq}) - Y_0(\sqrt{pq})]$	$\frac{2}{\pi^2\sqrt{xy}}\left(\frac{1}{4xy+1}\right)$
50.3	$\sqrt{pq}\, J_0\left(\frac{1}{2\sqrt{pq}}\right)$	$\frac{1}{\pi\sqrt{xy}}\,\mathrm{ber}\,(2\sqrt[4]{xy})$
50.4	$\sqrt{\frac{q}{p}}\, K_1\left(\sqrt{\frac{q}{p}}\right)$	$J_0\left(\sqrt{\frac{x}{y}}\right)$
50.5	$pq\,[\mathbf{H}_0(pq) - Y_0(pq)]$	$\frac{2}{\pi} J_0(xy)$
50.6	$\frac{p^{\frac{\nu}{2}+1}}{q^{\frac{\nu}{2}-1}} K_\nu(\sqrt{pq})$	$\frac{1}{(2x)^{\nu+1}}$ при $y > \frac{1}{4x}$ 0 при $y < \frac{1}{4x}$
50.7	$p^{k+\frac{1}{2}} q K_{2m}\left(\sqrt{2q\sqrt{p}\,e^{\frac{i\pi}{4}}}\right) \times$ $\times K_{2m}\left(\sqrt{2q\sqrt{p}\,e^{-\frac{i\pi}{4}}}\right)$	$\frac{1}{4} x^{-k} \exp\left(-\frac{1}{2xy^2}\right) W_{k,m}\left(\frac{1}{xy^2}\right)$
50.8	$\sqrt{p}\, q K_{2m}\left(\sqrt{2q\sqrt{p}\,e^{\frac{i\pi}{4}}}\right) \times$ $\times K_{2m}\left(\sqrt{2q\sqrt{p}\,e^{-\frac{i\pi}{4}}}\right)$	$\frac{\exp\left(-\frac{1}{2xy^2}\right) K_m\left(\frac{1}{2xy^2}\right)}{4y\sqrt{\pi x}}$
50.9	$p^{m+1} q K_{2m}\left(\sqrt{2q\sqrt{p}\,e^{\frac{i\pi}{4}}}\right) \times$ $\times K_{2m}\left(\sqrt{2q\sqrt{p}\,e^{-\frac{i\pi}{4}}}\right)$	$\frac{\exp\left(-\frac{1}{xy^2}\right)}{4x^{2m+1}y^{2m+1}}$
50.10	$pq K_0\left(\sqrt{2q\sqrt{p}\,e^{\frac{i\pi}{4}}}\right) \times$ $\times K_0\left(\sqrt{2q\sqrt{p}\,e^{-\frac{i\pi}{4}}}\right)$	$\frac{1}{4xy} \exp\left(-\frac{1}{xy^2}\right)$

№	$\bar{f}(p, q) = = pq \int_0^\infty \int_0^\infty e^{-px-qy} f(x, y)\, dx\, dy$	$f(x, y)$
50.11	$q\sqrt{p}\, K_1\left(\sqrt{2q\sqrt{p}\, e^{\frac{i\pi}{4}}}\right) \times K_1\left(\sqrt{2q\sqrt{p}\, e^{-\frac{i\pi}{4}}}\right)$	$\frac{1}{4}\exp\left(-\frac{1}{xy^2}\right)$
50.12	$p^{\frac{1}{2}(1+\mu-4\lambda)} q^{\mu+1} \times [\mathbf{H}_{-\mu}(q\sqrt{p}) - Y_{-\mu}(q\sqrt{p})]$	$\frac{2^{\mu+1} x^{\lambda-\frac{1}{2}} y^{-2\lambda-1}}{\sqrt{\pi}\, \Gamma\left(\frac{1}{2}-\mu\right) \Gamma(2\lambda+1)} \times \exp\left(-\frac{1}{2}xy^2\right) M_{\mu-\lambda, \lambda}(xy^2)$
50.13	$\frac{\sqrt{\pi}\, \Gamma(-2m)\, \Gamma(1+2m)}{2^{2m+\frac{3}{2}}} \times p^{\frac{1}{2}\left(\frac{3}{2}-2m\right)} q^{\frac{3}{2}+2m} \times \left[\mathbf{H}_{-2m-\frac{1}{2}}(q\sqrt{p}) - Y_{-2m-\frac{1}{2}}(q\sqrt{p})\right]$ $-\frac{1}{2} < m < 0$	$x^{2m}\exp(-xy^2)$
50.14	$pq\exp\left(\frac{pq}{2a}\right) K_0\left(\frac{pq}{2a}\right)$ $\operatorname{Re} a > 0$	$\sqrt{\frac{a}{\pi}}\, \frac{\exp(-axy)}{\sqrt{xy}}$
50.15	$pq\left[J_0^2(\sqrt{pq}) + I_0^2(\sqrt{pq})\right]$	$\frac{2}{\pi^2}\, \frac{1}{\sqrt{xy(xy+1)}}$
50.16	$2pq\left(\frac{a}{pq}\right)^{\frac{\mu+1}{2}} K_{\mu+1}(2\sqrt{apq})$	0 при $xy < a$ $\frac{(xy-a)^\mu}{\Gamma(\mu+1)}$ при $xy > a$

§ 51. Интегральные функции

№	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
51.1	$\frac{q}{p^{n-1}} S(n, pq),\ n>0$	$\frac{1}{(n-1)!}\frac{P(xy, n)}{y^n}$
51.2	$\frac{q}{p^{\nu-2}} S(\nu, pq)$ $\operatorname{Re}\nu>0$	$\frac{x^{\nu-1}}{\Gamma(\nu)} e^{-xy}$
51.3	$\frac{q}{p^{\mu-1}} S(\nu, pq),\ \operatorname{Re}\nu>0,\ \operatorname{Re}\mu>-1$	$\frac{y^{\frac{\mu-1}{2}}\exp\left(-\frac{xy}{2}\right)}{(-1)^{\nu-\mu-1}\Gamma(\nu)\,x^{\frac{\mu+1}{2}}}\times$ $\times W_{\nu-\frac{\mu+1}{2},\ \frac{\mu}{2}}(xy)$
51.4	$pq[\cos(2\sqrt{pq})\operatorname{Ci}(2\sqrt{pq})+$ $+\sin(2\sqrt{pq})\operatorname{si}(2\sqrt{pq})]$	$-\frac{\pi}{8}(xy+1)^{-\frac{3}{2}}$
51.5	$pqe^{p^2q}\operatorname{Ei}(-p^2q)$	$-\frac{\sin(x\sqrt{y})}{\sqrt{y}}$
51.6	$p^2qe^{p^2q}\operatorname{Ei}(-p^2q)$	$-\cos(x\sqrt{y})$
51.7	$qe^{\frac{q}{p}}\operatorname{Ei}\left(-\frac{q}{p}\right)$	$-\frac{1}{y}e^{-\frac{x}{y}}$
51.8	$\frac{q}{p}e^{\frac{p}{q}}\operatorname{Ei}\left(-\frac{q}{p}\right)$	$e^{-\frac{x}{y}}-1$
51.9	$pq[\sin(pq)\operatorname{Ci}(pq)-$ $-\cos(pq)\operatorname{si}(pq)]$	$\cos xy$
51.10	$pq[\cos(p\sqrt{q})\operatorname{Ci}(p\sqrt{q})+$ $+\sin(p\sqrt{q})\operatorname{si}(p\sqrt{q})]$	$-x\exp(-x^2y)$
51.11	$p\sqrt{q}[\sin(p\sqrt{q})\operatorname{Ci}(p\sqrt{q})-$ $-\cos(p\sqrt{q})\operatorname{si}(p\sqrt{q})]$	e^{x-2y}

№	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
51.12	$p^{1-2\nu} q\, S\left(\nu+\frac{3}{2},\ p^2q\right)$	$\frac{\sqrt{\pi}}{2^{\nu+1}\Gamma\left(\nu+\frac{3}{2}\right)} x^{\nu+1} y^{-\frac{\nu}{2}} J_\nu(x\sqrt{y})$
51.13	$p^{2-2\nu} q\, S\left(\nu+\frac{1}{2},\ p^2q\right)$	$\frac{\sqrt{\pi}}{2^{\nu}\Gamma\left(\nu+\frac{1}{2}\right)} x^{\nu} y^{-\frac{\nu}{2}} J_\nu(x\sqrt{y})$
51.14	$\left(\frac{\beta}{p}\right)^{n-1} q \left[\sin\left(\frac{pq+\alpha}{\beta}\right)\times \times \mathrm{Ci}\left(\frac{pq+\alpha}{\beta}\right) - \cos\left(\frac{pq+\alpha}{\beta}\right)\times \times \mathrm{Si}\left(\frac{pq+\alpha}{\beta}\right)\right]$	$y^{-n} U_n(2\beta xy,\ 2\sqrt{\alpha xy})$
51.15	$e^{-pq}\,\mathrm{Ei}\,(pq) - \ln pq - \mathbf{C}$	$\mathrm{Ei}\,(xy)$
51.16	$e^{-pq} pq\,\mathrm{Ei}\,(pq)$	e^{xy}
51.17	$-pq\,e^{pq}\,\mathrm{Ei}\,(-pq)$	e^{-xy}
51.18	$-pq\,e^{p^2q}\,\mathrm{Ei}\,(-p^2q)$	$\frac{\sin(x\sqrt{y})}{\sqrt{y}}$
51.19	$\sqrt{pq}\,\mathrm{Ei}\left(-\sqrt{q\sqrt{p}}\right)$	$\frac{1}{4\pi}\frac{1}{\sqrt{xy}}\mathrm{Ei}\left(-\frac{1}{64xy^2}\right)$
51.20	$-p^2q\,e^{p^2q}\,\mathrm{Ei}\,(-p^2q)$	$\cos(x\sqrt{y})$

§ 52. Вырожденные гипергеометрические функции

52.1	$pq\,e^{p^2q}\,\mathrm{erfc}\,(p\sqrt{q})$	$\frac{\cos(x\sqrt{y})}{\pi\sqrt{y}}$
52.2	$\frac{p\sqrt{q}}{\sqrt{\pi}} - p^2q\,e^{p^2q}\,\mathrm{erfc}\,(p\sqrt{q})$	$\frac{\sin(x\sqrt{y})}{\pi}$
52.3	$q e^{p^2q}\,\mathrm{erfc}\,(p\sqrt{q})$	$\frac{\sin(x\sqrt{y})}{\pi y}$

№	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
52.4	$\frac{p}{q}\exp\left(\frac{p^2}{4q}\right) D_{-2}\left(\frac{p}{\sqrt{q}}\right)$	x при $y > \frac{x^2}{2}$ 0 при $y < \frac{x^2}{2}$
52.5	$\exp\left(\frac{p}{2q}\right) W_{-1,\,\frac{1}{2}}\left(\frac{p}{q}\right)$	$e^{-\frac{y}{x}}$
52.6	$p\sqrt{q}\exp(p^2q)\,\mathrm{erfc}\,(p\sqrt{q})$	$\frac{1}{\sqrt{\pi}} J_0(x\sqrt{y})$
52.7	$\sqrt{pq}\exp\left(\frac{p}{q}\right)\mathrm{erfc}\left(\sqrt{\frac{p}{q}}\right)$	$\frac{1}{\pi\sqrt{xy}}\exp\left(-\frac{y}{x}\right)$
52.8	$\sqrt{p}\exp\left(\frac{q^2}{p}\right)\mathrm{erfc}\left(\frac{q}{\sqrt{p}}\right)$	$\frac{1}{\sqrt{\pi x}}$ при $y > 2\sqrt{x}$ 0 при $y < 2\sqrt{x}$
52.9	$\frac{p}{q\sqrt{q}}\exp\left(\frac{p^2}{q}\right)\mathrm{erfc}\left(\frac{p}{\sqrt{q}}\right)$	$\frac{1}{\sqrt{\pi}}\left(y - \frac{x^2}{4}\right)$ при $y > \frac{x^2}{4}$ 0 при $y < \frac{x^2}{4}$
52.10	$pq^{-\frac{\nu}{2}}\exp\left(\frac{p^2}{4q}\right) D_{-\nu}\left(\frac{p}{\sqrt{q}}\right)$ $\mathrm{Re}\,\nu > 0$	$\frac{x^{\nu-1}}{\Gamma(\nu)}$ при $y > \frac{x^2}{2}$ 0 при $y < \frac{x^2}{2}$
52.11	$(pq)^{1-\lambda}\exp\left(-\frac{1}{2pq}\right) M_{\chi,\mu}\left(\frac{1}{pq}\right)$ $\mathrm{Re}\,(\chi+\mu) > -\frac{1}{2}$	$\frac{\Gamma(2\mu+1)}{\Gamma\left(\chi+\mu+\frac{1}{2}\right)}(xy)^{\frac{2\chi-1}{3}} \times$ $\times J^{(2)}_{\chi+\mu-\frac{1}{2},\,2\mu}\left(3\sqrt[3]{xy}\right)$

№	$\overline{f}(p,\ q)=$ $=pq\int\limits_0^\infty\int\limits_0^\infty e^{-px-qy}f(x,\ y)\,dx\,dy$	$f(x,\ y)$
52.12	$p^{\frac{1}{4}(m-n+1)}q^{\frac{1}{2}(n-m+1)}\times$ $\times\exp\left(\frac{q\sqrt{p}}{2}\right)\times$ $\times W_{-\frac{1}{2}(n+m),\ -\frac{1}{2}(n-m)}(q\sqrt{p})$ $\operatorname{Re}(n-m)>-3$	$\pi^{\frac{1}{2}}2^{-\frac{1}{2}\left(n+\frac{1}{2}\right)}\Gamma\left(m+\frac{1}{2}\right)$ $x^{\frac{1}{2}\left(n-\frac{1}{2}\right)}y^{m-\frac{1}{2}}\exp\left(\frac{xy^2}{2}\right)\times$ $\times D_{-n-\frac{1}{2}}(y\sqrt{2x})$
52.13	$q\sqrt{p}\,D_{-n-1}\left(\frac{q\sqrt{p}}{2}\right)\times$ $\times D_{-n-1}\left(-\frac{q\sqrt{p}}{2}\right)$	$\frac{(-1)^n}{\Gamma(n+1)}2\sqrt{\pi}\times$ $\times\left[\operatorname{ber}^2_{n+\frac{1}{2}}(2y\sqrt{x})+\right.$ $\left.+\operatorname{bei}^2_{n+\frac{1}{2}}(2y\sqrt{x})\right]$
52.14	$q\sqrt{p}\,D_{-m-\frac{1}{2}}\left(q\sqrt{p}\,e^{\frac{i\pi}{4}}\right)\times$ $\times D_{-m-\frac{1}{2}}\left(q\sqrt{p}\,e^{-\frac{i\pi}{4}}\right)$	$\frac{\sqrt{\pi}}{\Gamma\left(m+\frac{1}{2}\right)}J_m(y\sqrt{x})\,I_m(y\sqrt{x})$
52.15	$p^{\frac{1}{4}}q\exp(q\sqrt{p})\left[1-\operatorname{erf}\left(\sqrt{q\sqrt{p}}\right)\right]$	$\frac{e^{xy^2}}{\pi\sqrt{y}}[1-\operatorname{erf}(y\sqrt{x})]$
52.16	$p^{-4m}q^{\frac{1}{2}-m}\exp\left(-\frac{1}{4p^2q}\right)\times$ $\times D_{2m}\left(\frac{1}{p\sqrt{q}}\right)$	$\frac{(-1)^m}{\sqrt{\pi}}x^{2m}y^{-\frac{1}{2}}\operatorname{ber}_{4m}(2\sqrt{x\sqrt{2y}})$
52.17	$p^{-2\nu}q^{\frac{1}{2}-m}\exp\left(-\frac{1}{4p^2q}\right)\times$ $\times D_{2m}\left(\frac{1}{p\sqrt{q}}\right)$	$(-1)^m\frac{2^{m-\frac{\nu}{2}}}{\sqrt{\pi}}x^{\nu}y^{m-\frac{\nu}{2}-\frac{1}{2}}\times$ $\times\left[\operatorname{ber}_{2\nu}(2\sqrt{x\sqrt{2y}})\cos\left(\frac{3\nu\pi}{2}\right)+\right.$ $\left.+\operatorname{bei}_{2\nu}(2\sqrt{x\sqrt{2y}})\sin\left(\frac{3\nu\pi}{2}\right)\right]$

№	$\bar{f}(p,\ q)= \\ =pq\int\limits_0^\infty\int\limits_0^\infty e^{-px-qy}f(x,\ y)\,dx\,dy$	$f(x,\ y)$
52.18	$p^{-4m}q^{-m}\exp\left(-\frac{1}{4p^2q}\right)\times D_{2m+1}\left(\frac{1}{p\sqrt{q}}\right)$	$(-1)^m\sqrt{\frac{2}{\pi}}\,x^{2m}\times \mathrm{bei}_{4m}\left(2\sqrt{x\sqrt{2y}}\right)$
52.19	$pq\exp\left(\frac{1}{4}p^2q^2\right)D_{-\frac{3}{2}}(pq)$	$\sqrt{2xy}\,J^{(2)}_{-\frac{1}{4},\ \frac{1}{4}}\left(3\sqrt[3]{\frac{x^2y^2}{8}}\right)$
52.20	$p^{-2\nu}q^{-m}\exp\left(-\frac{1}{4p^2q}\right)\times D_{2m+1}\left(\frac{1}{p\sqrt{q}}\right)$	$\frac{(-1)^m\,2^{m-\frac{\nu}{2}+\frac{1}{2}}}{\sqrt{\pi}}\,x^{\nu}y^{m-\frac{\nu}{2}}\times\left[\mathrm{bei}_{2m}\left(2\sqrt{x\sqrt{2y}}\right)\cos\left(\frac{3\nu\pi}{2}\right)-\mathrm{ber}_{2m}\left(2\sqrt{x\sqrt{2y}}\right)\sin\left(\frac{3\nu\pi}{2}\right)\right]$
52.21	$p^{-k}q^{-m}\exp\left(-\frac{1}{4pq}\right)\times D_{2m+1}\left(\frac{1}{\sqrt{pq}}\right)$	$(-1)^m\,2^{\frac{1}{3}(3m+k+1)}\,x^{\frac{1}{6}(4k+1)}\times y^{\frac{1}{6}(6m-2k+1)}\times J^{(2)}_{\frac{1}{2}(2k+1),\ \frac{1}{2}}\left(3\sqrt[3]{\frac{xy}{2}}\right)$
52.22	$p^{-k}q^{\frac{1}{2}-m}\exp\left(-\frac{1}{4pq}\right)\times D_{2m}\left(\frac{1}{\sqrt{pq}}\right)$	$(-1)^m\,2^{\frac{1}{6}(6m+2k-1)}\,x^{\frac{1}{6}(4k+1)}\times y^{\frac{1}{6}(6m-2k-2)}\times J^{(2)}_{k,\ -\frac{1}{2}}\left(3\sqrt[3]{\frac{xy}{2}}\right)$
52.23	$p^{1-n}q^{\mu}\exp\left(\frac{pq}{2}\right)\times W_{-n,\ -\mu+\frac{1}{2}}(pq)$	$\frac{x^{n-1}y^{-\mu}}{\Gamma(1+n-\mu)\,\Gamma(2n)}\exp\left(-\frac{xy}{2}\right)\times M_{\mu,\ n-\frac{1}{2}}(xy)$

№	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
52.24	$q\sqrt{p}\exp\left(\frac{p^2q^2}{4}\right)D_{-1}(pq)$	$\sqrt{\frac{\pi}{2}}x^{\frac{1}{2}}J^{(2)}_{-\frac{1}{4},\,\frac{1}{4}}\left(3\sqrt[3]{\frac{x^2y^2}{8}}\right)$
52.25	$pq\exp\left(\frac{p^2q^2}{4}\right)D_{-(m+1)}(pq)$	$\sqrt{\frac{\pi}{2}}\frac{1}{\Gamma(m+1)}(xy)^{\frac{1}{3}(m+1)}\times$ $\times J^{(2)}_{\frac{1}{2}(m-1),\,\frac{1}{2}m}\left(3\sqrt[3]{\frac{x^2y^2}{8}}\right)$
52.26	$qp^k\exp\left(\frac{p^2q^2}{4}\right)D_{-(m+k)}(pq)$	$\sqrt{\frac{\pi}{2}}\frac{1}{\Gamma(m+k)}x^{\frac{1}{3}(m+1)}\times$ $\times y^{\frac{1}{3}(m+3k-2)}\times$ $\times J^{(2)}_{\frac{1}{2}(m-1),\,\frac{1}{2}m}\left(3\sqrt[3]{\frac{x^2y^2}{8}}\right)$
52.27	$qp^{\frac{k}{2}}\exp\left(\frac{pq^2}{4}\right)D_{-(k+1)}(q\sqrt{p})$	$\sqrt{\frac{2}{\pi}}\frac{1}{\Gamma(k+1)}y^{k-1}\sin(y\sqrt{2x})$
52.28	$\sqrt{\pi p}\,q\exp\left(\frac{pq^2}{2}\right)D_{-2}(q\sqrt{2p})$	$\sin(y\sqrt{x})$
52.29	$q\sqrt{p}\exp\left(\frac{pq^2}{4}\right)D_{-1}(q\sqrt{p})$	$J_0(y\sqrt{2x})$
52.30	$q\sqrt{p}\exp\left(\frac{pq^2}{4}\right)D_{-(2m+1)}(q\sqrt{p})$	$\frac{2^{\frac{m}{2}}x^{\frac{m}{2}}y^m}{\Gamma(2m+1)}J_m(y\sqrt{2x})$
52.31	$q\exp\left(\frac{pq^2}{4}\right)D_{-2}(q\sqrt{p})$	$\sqrt{2x}\,J_1(y\sqrt{2x})$
52.32	$q\exp\left(\frac{pq^2}{4}\right)D_{-2m}(q\sqrt{p})$	$\frac{2^{\frac{m}{2}}}{\Gamma(2m)}x^{\frac{m}{2}}y^{m-1}J_m(y\sqrt{2x})$

№	$\bar{f}(p,\ q) = pq\int\limits_0^\infty\int\limits_0^\infty e^{-px-qy} f(x,\ y)\,dx\,dy$	$f(x,\ y)$
52.33	$qp^{\frac{k}{2}} \exp\left(\frac{pq^2}{4}\right) \times$ $\times D_{-(2m+k)}(q\sqrt{p})$	$\frac{2^{\frac{m}{2}}}{\Gamma(2m+k)} x^{\frac{m}{2}} y^{m+k-1} J_m(y\sqrt{2x})$
52.34	$\frac{1}{q^{b-c}p^a} \times$ $\times {}_2F_1\left(c,\ a+1;\ a+b+2;\ \frac{p-q}{p}\right)$ $a > -1,\ b > -1,\ c < a+b+2$	$\frac{\Gamma(a+b+2)}{\Gamma(a+1)\,\Gamma(b+1)\,\Gamma(a+b+2-c)} \times$ $\times \frac{x^a y^b}{(x+y)^c}$
52.35	${}_mF_n\left(a_1,\ \ldots,\ a_m;\ b_1,\ \ldots,\ b_n;\ \frac{1}{pq}\right)$	${}_mF_{n+2}(a_1,\ \ldots,\ a_m;$ $b_1,\ \ldots,\ b_n,\ 1,\ 1;\ xy)$
52.36	$\sqrt{pq}\ {}_0F_1(1;\ \sqrt{pq})$	$\frac{1}{\sqrt{\pi xy}}\ {}_0F_1\left(1;\ \frac{1}{16xy}\right)$
52.37	$pq \exp\left(\frac{p^2q^2}{4}\right) D_{-\nu}(pq)$	$\frac{(xy)^{\nu-1}}{\Gamma(\nu)} \left[J_{\nu-1}\left(\frac{x^2y^2}{2}\right)\right]^2$
52.38	$\sqrt{pq} \exp\left(\frac{pq}{2a}\right) W_{\mu,0}\left(\frac{pq}{2a}\right)$ $\operatorname{Re} a > 0,\ 2\operatorname{Re}\mu < 1$	$\frac{1}{a^\mu \Gamma^2\left(\frac{1}{2}-\mu\right)} (xy)^{-\mu-\frac{1}{2}} \times$ $\times \exp(-axy)$

§ 53. Разные функции

53.1	$q\sqrt{p}\,Q_\nu(pq)$, $\operatorname{Re}\nu > -1$	$\sqrt{\frac{\pi}{2y}}\, J_{\nu+\frac{1}{2}}(\sqrt{2ixy}) \times$ $\times J_{\nu+\frac{1}{2}}(\sqrt{-2ixy})$
53.2	$p^\nu q\, e^{pq}\, Q(pq,\ 1-\nu)$ $\operatorname{Re}\nu > 0$	$\frac{y^{\nu-1}}{\Gamma(\nu)} e^{-xy}$

№	$\bar{f}(p, q) = pq\int_0^\infty\int_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
53.3	$\frac{p}{q^{\mu-1}} P_\nu\left(\frac{p}{q}\right), \ -1 < \operatorname{Re}\nu < 0$	$-\frac{\sin(\nu\pi)}{\pi} \frac{(y^2-x^2)^{\frac{\mu-1}{2}}}{x} P_\nu^{1-\mu}\left(\frac{y}{x}\right)$ при $y > x$ 0 при $y < x$
53.4	$\lambda(qe^p, a)$	$\frac{y^x - y^a}{\ln y}$ при $x > a > 0$ 0 при $x < a$
53.5	$\nu\left(\frac{e^{-p}}{q}\right)$	$\int_0^x \frac{y^s ds}{[\Gamma(s+1)]^2}$
53.6	$\frac{pq}{\sqrt{p^2q^2+1}} \mathrm{B}\left(\frac{1}{\sqrt{p^2q^2+1}}\right)$	$\frac{1}{4}\frac{J_0(2\sqrt{ixy})}{\sqrt{x}} \overset{x}{*} \frac{I_0(2\sqrt{ixy})}{\sqrt{x}} + \frac{1}{4}\frac{J_2(2\sqrt{ixy})}{\sqrt{x}} \overset{x}{*} \frac{I_2(2\sqrt{ixy})}{\sqrt{x}}$
53.7	$\frac{pq}{(p^2q^2+1)^{3/2}} \mathrm{C}\left(\frac{1}{\sqrt{p^2q^2+1}}\right)$	$-\frac{1}{2}\frac{J_2(2\sqrt{ixy})}{\sqrt{x}} \overset{x}{*} \frac{I_2(2\sqrt{ixy})}{\sqrt{x}}$
53.8	$\frac{pq}{\sqrt{p^2q^2+1}} \mathrm{D}\left(\frac{1}{\sqrt{p^2q^2+1}}\right)$	$\frac{1}{4}\frac{J_0(2\sqrt{ixy})}{\sqrt{x}} \overset{x}{*} \frac{I_0(2\sqrt{ixy})}{\sqrt{x}} - \frac{1}{4}\frac{J_2(2\sqrt{ixy})}{\sqrt{x}} \overset{x}{*} \frac{I_2(2\sqrt{ixy})}{\sqrt{x}}$
53.9	$K\left(\frac{1}{pq}\right)$	$\frac{1}{2}\frac{J_0(2\sqrt{xy})}{\sqrt{x}} \overset{x}{*} \frac{I_0(2\sqrt{xy})}{\sqrt{x}}$

№	$\bar{f}(p, q) = pq\int\limits_0^\infty\int\limits_0^\infty e^{-px-qy} f(x, y)\,dx\,dy$	$f(x, y)$
53.10	$\frac{pq}{\sqrt{p^2q^2+1}} K\left(\frac{1}{\sqrt{p^2q^2+1}}\right)$	$\frac{1}{2}\frac{J_0(2\sqrt{ixy})}{\sqrt{x}} \overset{x}{*} \frac{I_0(2\sqrt{ixy})}{\sqrt{x}}$
53.11	$\sqrt{pq}\left\{P^{\mu}_{-\frac{1}{2}}\left(\sqrt{\frac{pq+a}{pq}}\right)\right\}^2$	$\frac{1}{\Gamma^2\left(\mu+\frac{1}{2}\right)}\frac{1}{\sqrt{xy}}[J_\mu(\sqrt{axy})]^2$ $2\,\mathrm{Re}\,\mu > -1$
53.12	$\sqrt{\frac{pq+a}{pq}} P^{-\mu}_{-\frac{1}{2}}\left(\sqrt{\frac{pq+a}{pq}}\right)\times$ $\times P^{-\mu-1}_{-\frac{1}{2}}\left(\sqrt{\frac{pq+a}{pq}}\right)$	$\frac{1}{\Gamma^2\left(\mu+\frac{3}{2}\right)}\times$ $\times J_\mu(\sqrt{axy})\,J_{\mu+1}(\sqrt{axy})$ $2\,\mathrm{Re}\,\mu > -3$

БИБЛИОГРАФИЯ

1. Диткин В. А и Кузнецов П. И. Справочник по операционному исчислению, М.— Л., Гостехиздат, 1951.
2. Диткин В. А. и Прудников А. П. Операционное исчисление по двум переменным и его приложения. М., Физматгиз, 1958.
3. Диткин В. А. и Прудников А. П. Интегральные преобразования и операционное исчисление. М., Физматгиз, 1961.
4. Микусинский Я. Операторное исчисление. М., ИЛ, 1956.
5. Градштейн И. С. и Рыжик И. М. Таблицы интегралов, сумм, рядов и произведений. М., Физматгиз, 1962.
6. Campbell G. and Foster R. Fourier integrals for practical applications. New York, van Nostrand, 1948.
7. Doetsch G., H. Kniess and D. Voelker. Tabellen zur Laplace Transformation, Springer, Berlin und Göttingen, 1947.
8. Doetsch G. Theorie und Anwendung der Laplace Transformation, Springer, Berlin, 1937.
9. Doetsch G. Handbuch der Laplace Transformation, bd. I—IV, Birkhäuser, Verlag, Basel, 1950—1956.
10. Erdelyi A., Magnus W., Oberhettinger F., Tricomi F. G. Tables of integral transforms, vol. I. New York, Mc Graw—Hill, 1954.
11. Humbert, P. Le calcul symbolique, Hermann. Paris, 1934.
12. Mc Lachlan N. W. And P. Humbert. Formulaire pour le calcul symbolique, Gauthier—Villars, Second edition. Paris, 1950.
13. Mc Lachlan N. W., P. Humbert and L. Poli. Supplement au formulaire pour le calcul symbolique, Mem. Sci. Math. (Paris), Gauthier—Villars, 1950.
14. Voelker D. and Doetsch G. Die Zweidimensionale Laplace Transformation, Birkhäuser. Basel, 1950.
15 Wagner K. W. Operatorenrechnung und Laplacesche Transformation. Leipzig, 1950.

Виталий Арсеньевич Диткин
Анатолий Платонович Прудников

Справочник
по операционному исчислению

Редактор А. И. Селиверстова
Художественный редактор Н. К. Гуторов
Технический редактор Т. Д. Гарина
Корректор С. К. Кащеева

Сдано в набор 1/VI-64 г. Подписано к печати 28/I-65 г.
Бумага 60×90[1]/[16]. 29,25 печ. л. 28,41 уч.-изд. л.
Тираж 25 000 экз. Т-01418. Изд. № ФМХ/216.
Цена 1 р. 57 к. Заказ 1125
Издательство «Высшая школа»
Москва, И-51, Неглинная ул. 29/14
Сводный тематический план 1965 г.
учебников для вузов и техникумов. Позиция 236.

Отпечатано с матриц Первой Образцовой типографии
имени А. А. Жданова в Московской тип. № 4
Главполиграфпрома Государственного комитета
Совета Министров СССР по печати
Москва, Б. Переяславская, 46