

Table 1: Laplace Transform Pairs

	$F(s)$	$f(t)$
1	$\frac{1}{s-a}$	e^{at}
2	$\frac{1}{(s-a)^2}$	te^{at}
3	$\frac{1}{(s-a)^3}$	$\frac{1}{2}t^2e^{at}$
4	$\frac{1}{(s-a)^4}$	$\frac{1}{6}t^3e^{at}$
5	$\frac{1}{(s-a)^5}$	$\frac{1}{24}t^4e^{at}$
6	$\frac{1}{s^2+a^2}$	$\frac{\sin at}{a}$
7	$\frac{s}{s^2+a^2}$	$\cos at$
8	$\frac{1}{s^2-a^2}$	$\frac{\sinh at}{a}$
9	$\frac{s}{s^2-a^2}$	$\cosh at$
10	$\frac{1}{(s^2+a^2)^2}$	$\frac{\sin at - at \cos at}{2a^3}$
11	$\frac{s}{(s^2+a^2)^2}$	$\frac{t \sin at}{2a}$
12	$\frac{s^2}{(s^2+a^2)^2}$	$\frac{\sin at + at \cos at}{2a}$
13	$\frac{s^3}{(s^2+a^2)^2}$	$\cos at - \frac{1}{2}at \sin at$
14	$\frac{s^2-a^2}{(s^2+a^2)^2}$	$t \cos at$
15	$\frac{1}{(s^2-a^2)^2}$	$\frac{at \cosh at - \sinh at}{2a^3}$
16	$\frac{s}{(s^2-a^2)^2}$	$\frac{t \sinh at}{2a}$

	$F(s)$	$f(t)$
17	$\frac{s^2}{(s^2 - a^2)^2}$	$\frac{\sinh at + at \cosh at}{2a}$
18	$\frac{s^3}{(s^2 - a^2)^2}$	$\cosh at + \frac{1}{2}at \sinh at$
19	$\frac{s^2 + a^2}{(s^2 - a^2)^2}$	$t \cosh at$
20	$\frac{1}{(s^2 + a^2)^3}$	$\frac{(3 - a^2t^2) \sin at - 3at \cos at}{8a^5}$
21	$\frac{s}{(s^2 + a^2)^3}$	$\frac{t \sin at - at^2 \cos at}{8a^3}$
22	$\frac{s^2}{(s^2 + a^2)^3}$	$\frac{(1 + a^2t^2) \sin at - at \cos at}{8a^3}$
23	$\frac{s^3}{(s^2 + a^2)^3}$	$\frac{3t \sin at + at^2 \cos at}{8a}$
24	$\frac{s^4}{(s^2 + a^2)^3}$	$\frac{(3 - a^2t^2) \sin at + 5at \cos at}{8a}$
25	$\frac{s^5}{(s^2 + a^2)^3}$	$\frac{(8 - a^2t^2) \cos at - 7at \sin at}{8}$
26	$\frac{3s^2 - a^2}{(s^2 + a^2)^3}$	$\frac{t^2 \sin at}{2a}$
27	$\frac{s^3 - 3a^2s}{(s^2 + a^2)^3}$	$\frac{1}{2}t^2 \cos at$
28	$\frac{s^4 - 6a^2s^2 + a^4}{(s^2 + a^2)^4}$	$\frac{1}{6}t^3 \cos at$
29	$\frac{s^3 - a^2s}{(s^2 + a^2)^4}$	$\frac{t^3 \sin at}{24a}$
30	$\frac{1}{(s^2 - a^2)^3}$	$\frac{(3 + a^2t^2) \sinh at - 3at \cosh at}{8a^5}$
31	$\frac{s}{(s^2 - a^2)^3}$	$\frac{at^2 \cosh at - t \sinh at}{8a^3}$
32	$\frac{s^2}{(s^2 - a^2)^3}$	$\frac{at \cosh at - (a^2t^2 - 1) \sinh at}{8a^3}$
33	$\frac{s^3}{(s^2 - a^2)^3}$	$\frac{3t \sinh at + at^2 \cosh at}{8a}$

	$F(s)$	$f(t)$
34	$\frac{s^4}{(s^2 - a^2)^3}$	$\frac{(3 + a^2 t^2) \sinh at + 5at \cosh at}{8a}$
35	$\frac{s^5}{(s^2 - a^2)^3}$	$\frac{(8 + a^2 t^2) \cosh at + 7at \sinh at}{8}$
36	$\frac{3s^2 + a^2}{(s^2 - a^2)^3}$	$\frac{t^2 \sinh at}{2a}$
37	$\frac{s^3 + 3a^2 s}{(s^2 - a^2)^3}$	$\frac{1}{2} t^2 \cosh at$
38	$\frac{s^4 + 6a^2 s^2 + a^2}{(s^2 - a^2)^4}$	$\frac{1}{6} t^3 \cosh at$
39	$\frac{s^3 + a^2 s}{(s^2 - a^2)^4}$	$\frac{t^3 \sinh at}{24a}$
40	$\frac{1}{s^3 + a^3}$	$\frac{e^{\frac{1}{2}at}}{3a^2} \left[\sqrt{3} \sin \frac{\sqrt{3}at}{2} - \cos \frac{\sqrt{3}at}{2} + e^{-\frac{3at}{2}} \right]$
41	$\frac{s}{s^3 + a^3}$	$\frac{e^{\frac{1}{2}at}}{3a} \left[\sqrt{3} \sin \frac{\sqrt{3}at}{2} + \cos \frac{\sqrt{3}at}{2} - e^{-\frac{3at}{2}} \right]$
42	$\frac{s^2}{s^3 + a^3}$	$\frac{1}{3} e^{-at} + \frac{2}{3} e^{\frac{at}{2}} \cos \frac{\sqrt{3}at}{2}$
43	$\frac{1}{s^3 - a^3}$	$\frac{e^{-\frac{1}{2}at}}{3a^2} \left[e^{\frac{3at}{2}} - \sqrt{3} \sin \frac{\sqrt{3}at}{2} - \cos \frac{\sqrt{3}at}{2} \right]$
44	$\frac{s}{s^3 - a^3}$	$\frac{e^{-\frac{1}{2}at}}{3a} \left[\sqrt{3} \sin \frac{\sqrt{3}at}{2} - \cos \frac{\sqrt{3}at}{2} + e^{\frac{3at}{2}} \right]$
45	$\frac{s^2}{s^3 - a^3}$	$\frac{1}{3} e^{at} + \frac{2}{3} e^{-\frac{at}{2}} \cos \frac{\sqrt{3}at}{2}$
46	$\frac{1}{s^4 + 4a^4}$	$\frac{\sin at \cosh at - \cos at \sinh at}{4a^3}$
47	$\frac{s}{s^4 + 4a^4}$	$\frac{\sin at \sinh at}{2a^2}$
48	$\frac{s^2}{s^4 + 4a^4}$	$\frac{\sin at \cosh at + \cos at \sinh at}{2a}$
49	$\frac{s^3}{s^4 + 4a^4}$	$\cos at \cosh at$
50	$\frac{1}{s^4 - a^4}$	$\frac{\sinh at - \sin at}{2a^3}$

	$F(s)$	$f(t)$
51	$\frac{s}{s^4 - a^4}$	$\frac{\cosh at - \cos at}{2a^2}$
52	$\frac{s^2}{s^4 - a^4}$	$\frac{\sinh at + \sin at}{2a}$
53	$\frac{s^3}{s^4 - a^4}$	$\frac{\cosh at + \cos at}{2}$
54	$\frac{1}{s\sqrt{s+a}}$	$\frac{\operatorname{erf} \sqrt{at}}{\sqrt{a}}$
55	$\frac{1}{\sqrt{s}(s-a)}$	$\frac{e^{at} \operatorname{erf} \sqrt{at}}{\sqrt{a}}$
56	$\frac{1}{\sqrt{s^2 + a^2}}$	$J_0(at)$
57	$\frac{1}{\sqrt{s^2 - a^2}}$	$I_0(at)$
58	$\frac{\sqrt{s^2 + a^2} - s}{\sqrt{s^2 + a^2}}$	$aJ_1(at)$
59	$\frac{(\sqrt{s^2 + a^2} - s)^2}{\sqrt{s^2 + a^2}}$	$a^2J_2(at)$
60	$\frac{(\sqrt{s^2 + a^2} - s)^3}{\sqrt{s^2 + a^2}}$	$a^3J_3(at)$
61	$\frac{(\sqrt{s^2 + a^2} - s)^4}{\sqrt{s^2 + a^2}}$	$a^4J_4(at)$
62	$\frac{s - \sqrt{s^2 - a^2}}{\sqrt{s^2 - a^2}}$	$aI_1(at)$
63	$\frac{(s - \sqrt{s^2 - a^2})^2}{\sqrt{s^2 - a^2}}$	$a^2I_2(at)$
64	$\frac{(s - \sqrt{s^2 - a^2})^3}{\sqrt{s^2 - a^2}}$	$a^3I_3(at)$
65	$\frac{(s - \sqrt{s^2 - a^2})^4}{\sqrt{s^2 - a^2}}$	$a^4I_4(at)$
66	$\frac{1}{(s^2 + a^2)^{\frac{3}{2}}}$	$\frac{tJ_0(at)}{a}$
67	$\frac{s}{(s^2 + a^2)^{\frac{3}{2}}}$	$tJ_0(at)$

	$F(s)$	$f(t)$
68	$\frac{s^2}{(s^2 + a^2)^{\frac{3}{2}}}$	$J_0(at) - atJ_1(at)$
69	$\frac{1}{(s^2 - a^2)^{\frac{3}{2}}}$	$\frac{tI_0(at)}{a}$
70	$\frac{s}{(s^2 - a^2)^{\frac{3}{2}}}$	$tI_0(at)$
71	$\frac{s^2}{(s^2 - a^2)^{\frac{3}{2}}}$	$I_0(at) + atI_1(at)$
72	$\frac{a}{s(e^s - a)}$	$\sum_{k=1}^{\lfloor t \rfloor} a^k$
73	$\frac{e^s - 1}{s(e^s - a)}$	$a^{\lfloor t \rfloor}$
74	$\frac{e^{-\frac{a}{s}}}{\sqrt{s}}$	$\frac{\cos 2\sqrt{at}}{\sqrt{\pi t}}$
75	$\frac{e^{-\frac{a}{s}}}{s^{\frac{3}{2}}}$	$\frac{\sin 2\sqrt{at}}{\sqrt{\pi a}}$
76	$\frac{e^{-\frac{a}{s}}}{s}$	$J_0(2\sqrt{at})$
77	$\frac{e^{-\frac{a}{s}}}{s^2}$	$\left(\frac{t}{a}\right)^{\frac{1}{2}} J_1(2\sqrt{at})$
78	$\frac{e^{-\frac{a}{s}}}{s^3}$	$\left(\frac{t}{a}\right) J_2(2\sqrt{at})$
79	$\frac{e^{-\frac{a}{s}}}{s^4}$	$\left(\frac{t}{a}\right)^{\frac{3}{2}} J_3(2\sqrt{at})$
80	$\frac{e^{-a\sqrt{s}}}{\sqrt{s}}$	$\frac{e^{-\frac{a^2}{4t}}}{\sqrt{\pi t}}$
81	$e^{-a\sqrt{s}}$	$\frac{a}{2\sqrt{\pi t^3}} e^{-\frac{a^2}{4t}}$
82	$\frac{1 - e^{-a\sqrt{s}}}{s}$	$\operatorname{erf}\left(\frac{a}{2\sqrt{t}}\right)$
83	$\frac{e^{-a\sqrt{s}}}{s}$	$\operatorname{erfc}\left(\frac{a}{2\sqrt{t}}\right)$

	$F(s)$	$f(t)$
84	$\frac{e^{-\frac{a}{\sqrt{s}}}}{s}$	$\frac{1}{\sqrt{\pi ta}} \int_0^\infty e^{-\frac{u^2}{4a^2t}} J_0(2\sqrt{u}) du$
85	$\frac{e^{-\frac{a}{\sqrt{s}}}}{s^2}$	$\frac{1}{\sqrt{\pi ta^3}} \int_0^\infty u e^{-\frac{u^2}{4a^2t}} J_2(2\sqrt{u}) du$
86	$\frac{e^{-\frac{a}{\sqrt{s}}}}{s^3}$	$\frac{1}{\sqrt{\pi ta^5}} \int_0^\infty u^2 e^{-\frac{u^2}{4a^2t}} J_4(2\sqrt{u}) du$
87	$\frac{e^{-\frac{a}{\sqrt{s}}}}{s^4}$	$\frac{1}{\sqrt{\pi ta^7}} \int_0^\infty u^3 e^{-\frac{u^2}{4a^2t}} J_6(2\sqrt{u}) du$
88	$\frac{e^{-\frac{a}{\sqrt{s}}}}{s^5}$	$\frac{1}{\sqrt{\pi ta^9}} \int_0^\infty u^4 e^{-\frac{u^2}{4a^2t}} J_8(2\sqrt{u}) du$
89	$\frac{\ln[(s^2 + a^2)/a^2]}{2s}$	$\text{Ci}(at)$
90	$\frac{\ln[(s + a)/a]}{s}$	$\text{Ei}(at)$
91	$\frac{-(\gamma + \ln s)}{s}$	$\ln t$
92	$\frac{\pi^2}{6s} - \frac{(\gamma + \ln s)^2}{s}$	$\ln^2 t$
93	$\frac{\ln s}{s}$	$-(\ln t + \gamma)$
94	$\frac{\ln^2 s}{s}$	$(\ln t + \gamma)^2 - \frac{\pi^2}{6}$
95	$\frac{\Gamma'(2) - \Gamma(2) \ln s}{s^2}$	$t \ln t$
96	$\frac{\Gamma'(3) - \Gamma(3) \ln s}{s^3}$	$t^2 \ln t$
97	$\frac{\Gamma'(4) - \Gamma(4) \ln s}{s^4}$	$t^3 \ln t$
98	$\frac{\Gamma'(5) - \Gamma(5) \ln s}{s^5}$	$t^4 \ln t$
99	$\arctan\left(\frac{a}{s}\right)$	$\frac{\sin at}{t}$
100	$\frac{\arctan(\frac{a}{s})}{s}$	$\text{Si}(at)$

	$F(s)$	$f(t)$
101	$\frac{e^{\frac{a}{s}}}{\sqrt{s}} \operatorname{erfc}(\sqrt{\frac{a}{s}})$	$\frac{e^{-2\sqrt{at}}}{\sqrt{\pi t}}$
102	$e^{\frac{s^2}{4a^2}} \operatorname{erfc}(\frac{s}{2a})$	$\frac{2a}{\sqrt{\pi}} e^{-a^2 t^2}$
103	$\frac{e^{\frac{s^2}{4a^2}} \operatorname{erfc}(\frac{s}{2a})}{s}$	$\operatorname{erf}(at)$
104	$\frac{e^{as} \operatorname{erfc}(\frac{s}{2a})}{\sqrt{s}}$	$\frac{1}{\sqrt{\pi(t+a)}}$
105	$e^{as} \operatorname{Ei}(as)$	$\frac{1}{t+a}$
106	$\frac{1}{a} [\cos as (\frac{\pi}{2} - \operatorname{Si}(as)) - \sin as \operatorname{Ci}(as)]$	$\frac{1}{t^2 + a^2}$
107	$\sin as (\frac{\pi}{2} - \operatorname{Si}(as)) + \cos as \operatorname{Ci}(as)$	$\frac{t}{t^2 + a^2}$
108	$\frac{1}{s} [\sin as (\frac{\pi}{2} - \operatorname{Si}(as)) - \sin as \operatorname{Ci}(as)]$	$\arctan\left(\frac{t}{a}\right)$
109	$\frac{1}{s} [\sin as (\frac{\pi}{2} - \operatorname{Si}(as)) + \cos as \operatorname{Ci}(as)]$	$\frac{1}{2} \ln\left(\frac{t^2 + a^2}{a^2}\right)$
110	$\left[\frac{\pi}{2} - \operatorname{Si}(as)\right]^2 + \operatorname{Ci}^2(as)$	$\frac{1}{t} \ln\left(\frac{t^2 + a^2}{a^2}\right)$
111	1	$\delta(t)$
112	e^{-as}	$\delta(t-a)$
113	$\frac{e^{-as}}{s}$	$H(t-a)$
114	$\frac{1}{as^2} \tanh\left(\frac{as}{2}\right)$	triangular wave
115	$\frac{1}{s} \tanh\left(\frac{as}{2}\right)$	$\operatorname{sgn}(\sin \frac{\pi t}{a})$
116	$\frac{\pi a}{a^2 s^2 + \pi^2} \coth\left(\frac{as}{2}\right)$	$ \sin \frac{\pi t}{a} $
117	$\frac{\pi a}{(a^2 s^2 + \pi^2)(1 - e^{-as})}$	$\sin \frac{\pi t}{a} (\frac{1}{2} \operatorname{sgn}(\sin \frac{\pi t}{a}) + \frac{1}{2})$

	$F(s)$	$f(t)$
118	$\frac{1}{as^2} - \frac{e^{-as}}{s(1 - e^{-as})}$	$\frac{1}{2} \text{sawtooth}(\frac{2\pi t}{a}) + \frac{1}{2}$
119	$\frac{e^{-as}(1 - e^{-\varepsilon s})}{s}$	$H(t - a)H(a + \varepsilon - t)$
120	$\frac{1}{s(1 - e^{-as})}$	$\lceil \frac{t}{a} \rceil$
121	$\frac{e^{-s} + e^{-2s}}{s(1 - e^{-as})^2}$	$\lfloor t \rfloor^2$
122	$\frac{1 - e^{-s}}{s(1 - ae^{-s})}$	$a^{\lfloor t \rfloor}$
123	$\frac{\pi a(1 + e^{-as})}{a^2 s^2 + \pi^2}$	$\sin\left(\frac{\pi t}{a}\right)\chi_{[0,a]}(t)$
124	$\frac{1}{\sqrt{s+a} + \sqrt{s+b}}$	$\frac{e^{-bt} - e^{-at}}{2(b-a)\sqrt{\pi t^3}}$
125	$\frac{1}{\sqrt{s-a} + b}$	$e^{at}\left[\frac{1}{\sqrt{\pi t}} - be^{B^2 t} \operatorname{erfc}(b\sqrt{t})\right]$
126	$\frac{e^{b(s-\sqrt{s^2-a^2})}}{\sqrt{s^2+a^2}}$	$J_0(a\sqrt{t(t+2b)})$
127	$\frac{e^{-b\sqrt{s^2-a^2}}}{\sqrt{s^2+a^2}}$	$J_0(a\sqrt{t^2-b^2})\chi_{[b,\infty]}(t)$
128	$\ln\left(\frac{s+a}{s+b}\right)$	$\frac{e^{-bt} - e^{-at}}{t}$
129	$\ln\left(\frac{s^2+a^2}{s^2+b^2}\right)$	$-\frac{2(\cos at - \cos bt)}{t}$
130	$\frac{1}{(s-b)^2 + a^2}$	$\frac{e^{bt} \sin at}{a}$
131	$\frac{s-b}{(s-b)^2 + a^2}$	$e^{bt} \cos at$
132	$\frac{1}{(s-b)^2 - a^2}$	$\frac{e^{bt} \sinh at}{a}$
133	$\frac{s-b}{(s-b)^2 - a^2}$	$e^{bt} \cosh at$
134	$\frac{1}{(s-a)(s-b)}$	$\frac{e^{bt} - e^{at}}{b-a}$

	$F(s)$	$f(t)$
135	$\frac{s}{(s-a)(s-b)}$	$\frac{be^{bt} - ae^{at}}{b-a}$
136	$\frac{\sinh bs}{s \sinh as}$	$\frac{b}{a} + \frac{2}{\pi} \sum_{n=1}^{\infty} \frac{(-1)^n}{n} \sin \frac{n\pi b}{a} \cos \frac{n\pi t}{a}$
137	$\frac{\sinh bs}{s \cosh as}$	$\frac{4}{\pi} \sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{2n-1} \sin \frac{(2n-1)\pi b}{2a} \sin \frac{(2n-1)\pi t}{2a}$
138	$\frac{\cosh bs}{s \sinh as}$	$\frac{t}{a} + \frac{2}{\pi} \sum_{n=1}^{\infty} \frac{(-1)^n}{n} \cos \frac{n\pi b}{a} \sin \frac{n\pi t}{a}$
139	$\frac{\cosh bs}{s \cosh as}$	$1 + \frac{4}{\pi} \sum_{n=1}^{\infty} \frac{(-1)^n}{2n-1} \cos \frac{(2n-1)\pi b}{2a} \cos \frac{(2n-1)\pi t}{2a}$
140	$\frac{\sinh bs}{s^2 \sinh as}$	$\frac{t}{a} + \frac{2a}{\pi^2} \sum_{n=1}^{\infty} \frac{(-1)^n}{n^2} \sin \frac{n\pi b}{a} \sin \frac{n\pi t}{a}$
141	$\frac{\sinh bs}{s^2 \cosh as}$	$b + \frac{8a}{\pi^2} \sum_{n=1}^{\infty} \frac{(-1)^n}{(2n-1)^2} \sin \frac{(2n-1)\pi b}{2a} \cos \frac{(2n-1)\pi t}{2a}$
142	$\frac{\cosh bs}{s^2 \sinh as}$	$\frac{t^2}{2a} + \frac{2a}{\pi^2} \sum_{n=1}^{\infty} \frac{(-1)^n}{n^2} \cos \frac{n\pi b}{a} \left(1 - \cos \frac{n\pi t}{a}\right)$
143	$\frac{\cosh bs}{s^2 \cosh as}$	$t + \frac{8a}{\pi^2} \sum_{n=1}^{\infty} \frac{(-1)^n}{(2n-1)^2} \cos \frac{(2n-1)\pi b}{2a} \sin \frac{(2n-1)\pi t}{2a}$
144	$\frac{\cosh bs}{s^3 \cosh as}$	$\frac{1}{2}(t^2 + b^2 + a^2) + \frac{16a^2}{\pi^3} \sum_{n=1}^{\infty} \frac{(-1)^n}{(2n-1)^3} \cos \frac{(2n-1)\pi b}{2a} \cos \frac{(2n-1)\pi t}{2a}$
145	$\frac{\sinh b\sqrt{s}}{\sinh a\sqrt{s}}$	$\frac{2\pi}{a^2} \sum_{n=1}^{\infty} (-1)^{n-1} n e^{-\frac{n^2\pi^2 t}{a^2}} \sin \frac{n\pi b}{a}$
146	$\frac{\cosh b\sqrt{s}}{\cosh a\sqrt{s}}$	$\frac{\pi}{a^2} \sum_{n=1}^{\infty} (-1)^{n-1} (2n-1) e^{-\frac{(2n-1)^2\pi^2 t}{4a^2}} \cos \frac{(2n-1)\pi b}{2a}$
147	$\frac{\sinh b\sqrt{s}}{\sqrt{s} \cosh a\sqrt{s}}$	$\frac{2}{a} \sum_{n=1}^{\infty} (-1)^{n-1} e^{-\frac{(2n-1)^2\pi^2 t}{4a^2}} \sin \frac{(2n-1)\pi b}{2a}$
148	$\frac{\cosh b\sqrt{s}}{\sqrt{s} \sinh a\sqrt{s}}$	$\frac{1}{a} + \frac{2}{a} \sum_{n=1}^{\infty} (-1)^n n e^{-\frac{n^2\pi^2 t}{a^2}} \sin \frac{n\pi b}{a}$
149	$\frac{\sinh b\sqrt{s}}{s \sinh a\sqrt{s}}$	$\frac{b}{a} + \frac{2}{\pi} \sum_{n=1}^{\infty} \frac{(-1)^n}{n} e^{-\frac{n^2\pi^2 t}{a^2}} \sin \frac{n\pi b}{a}$

	$F(s)$	$f(t)$
150	$\frac{\cosh b\sqrt{s}}{s \cosh a\sqrt{s}}$	$1 + \frac{4}{\pi} \sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{(2n-1)} e^{-\frac{(2n-1)^2 \pi^2 t}{4a^2}} \cos \frac{(2n-1)\pi b}{2a}$
151	$\frac{\sinh b\sqrt{s}}{s^2 \sinh a\sqrt{s}}$	$\frac{bt}{a} + \frac{2a^2}{\pi^3} \sum_{n=1}^{\infty} \frac{(-1)^n}{n^3} (1 - e^{-\frac{n^2 \pi^2 t}{a^2}}) \sin \frac{n\pi b}{a}$
152	$\frac{\cosh b\sqrt{s}}{s^2 \cosh a\sqrt{s}}$	$\frac{1}{2}(b^2 - a^2) + t - \frac{16a^2}{\pi^3} \sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{(2n-1)^3} e^{-\frac{(2n-1)^2 \pi^2 t}{4a^2}} \cos \frac{(2n-1)\pi b}{2a}$
153	$\frac{1}{s(1 + e^{-as})}$	$\frac{1}{2} \operatorname{sgn}(\sin \frac{\pi t}{a}) + \frac{1}{2}$
154	$\sqrt{s+a} - \sqrt{s+b}$	$\frac{e^{-bt} - e^{-at}}{2\sqrt{\pi t^3}}$
155	$\frac{\ln(s-1+\sqrt{s^2-2s})}{\sqrt{s^2-2s}}$	$e^t K_0(t)$
156	$s^{-(a+\frac{1}{2})}$	$\frac{2^a t^{a-\frac{1}{2}}}{(2n-1)!!\sqrt{\pi}}$
157	$\frac{1}{s} \left(\frac{s-1}{s} \right)^a$	$L_a(t)$
158	$\frac{s}{(s+a)^{\frac{3}{2}}}$	$\frac{e^{-at}(1-2at)}{\sqrt{\pi t}}$
159	$\frac{\sqrt{s}}{s-a}$	$\frac{1}{\sqrt{\pi t}} + \sqrt{a} e^{at} \operatorname{erf}(\sqrt{at})$
160	$\frac{1}{\sqrt{s}(\sqrt{s}+a)}$	$e^{a^2 t} \operatorname{erf}(a\sqrt{t})$
161	$\frac{b^2 - a^2}{(s-a^2)(b+\sqrt{s})}$	$e^{a^2 t}(b - a \operatorname{erf}(a\sqrt{t})) - be^{b^2 t} \operatorname{erfc}(b\sqrt{t})$
162	$\frac{1}{(s+a)\sqrt{s+b}}$	$\frac{1}{\sqrt{b-a}} e^{-at} \operatorname{erf}(\sqrt{b-a}\sqrt{t})$
163	$\frac{b^2 - a^2}{\sqrt{s}(s-a^2)(b+\sqrt{s})}$	$e^{a^2 t}(\frac{b}{a} \operatorname{erf}(a\sqrt{t}) - 1) + e^{b^2 t} \operatorname{erfc}(b\sqrt{t})$
164	$\frac{(1-s)}{s^{\frac{3}{2}}}$	$\frac{1}{2\sqrt{\pi}} H_2(\sqrt{t})$
165	$\frac{(1-s)^2}{s^{\frac{5}{2}}}$	$\frac{1}{12\sqrt{\pi}} H_4(\sqrt{t})$

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166	$\frac{(1-s)^3}{s^{\frac{7}{2}}}$	$\frac{1}{120\sqrt{\pi}}H_6(\sqrt{t})$
167	$\frac{(1-s)^4}{s^{\frac{9}{2}}}$	$\frac{1}{1680\sqrt{\pi}}H_8(\sqrt{t})$
168	$\frac{(1-s)}{s^{\frac{5}{2}}}$	$\frac{1}{6\sqrt{\pi}}H_3(\sqrt{t})$
169	$\frac{(1-s)^2}{s^{\frac{7}{2}}}$	$\frac{1}{60\sqrt{\pi}}H_5(\sqrt{t})$
170	$\frac{(1-s)^3}{s^{\frac{9}{2}}}$	$\frac{1}{840\sqrt{\pi}}H_7(\sqrt{t})$
171	$\frac{(1-s)^4}{s^{\frac{11}{2}}}$	$\frac{1}{15120\sqrt{\pi}}H_9(\sqrt{t})$
172	$\frac{\sqrt{s+2a}}{\sqrt{s}}$	$ae^{-at}[I_1(at) + I_0(at)]$
173	$\frac{1}{\sqrt{s+a}\sqrt{s+b}}$	$e^{-\frac{1}{2}(a+b)t}I_0\left(\frac{a-b}{2}t\right)$
174	$\frac{\Gamma(\frac{3}{2})}{(s+a)^{\frac{3}{2}}(s+b)^{\frac{3}{2}}}$	$\sqrt{(\pi)}\left(\frac{t}{a-b}\right)e^{-\frac{1}{2}(a+b)t}I_1\left(\frac{a-b}{2}t\right)$
175	$\frac{\Gamma(\frac{5}{2})}{(s+a)^{\frac{5}{2}}(s+b)^{\frac{5}{2}}}$	$\sqrt{(\pi)}\left(\frac{t}{a-b}\right)^2e^{-\frac{1}{2}(a+b)t}I_2\left(\frac{a-b}{2}t\right)$
176	$\frac{\Gamma(\frac{7}{2})}{(s+a)^{\frac{7}{2}}(s+b)^{\frac{7}{2}}}$	$\sqrt{(\pi)}\left(\frac{t}{a-b}\right)^3e^{-\frac{1}{2}(a+b)t}I_3\left(\frac{a-b}{2}t\right)$
177	$\frac{\Gamma(\frac{9}{2})}{(s+a)^{\frac{9}{2}}(s+b)^{\frac{9}{2}}}$	$\sqrt{(\pi)}\left(\frac{t}{a-b}\right)^4e^{-\frac{1}{2}(a+b)t}I_4\left(\frac{a-b}{2}t\right)$
178	$\frac{1}{(s+a)^{\frac{1}{2}}(s+b)^{\frac{3}{2}}}$	$te^{-\frac{1}{2}(a+b)t}\left(I_0\left(\frac{a-b}{2}t\right) + I_1\left(\frac{a-b}{2}t\right)\right)$
179	$\frac{\sqrt{s+2a}-\sqrt{s}}{\sqrt{s+2a}+\sqrt{s}}$	$\frac{e^{-at}}{t}I_1(at)$
180	$\frac{\sqrt{a-b}}{\sqrt{\sqrt{s+a}+\sqrt{s+b}}}$	$\frac{e^{-\frac{1}{2}(a+b)t}}{2t}I_{\frac{1}{2}}\left(\frac{a-b}{2}t\right)$
181	$\frac{(a-b)^{\frac{3}{2}}}{(\sqrt{s+a}+\sqrt{s+b})^{\frac{3}{2}}}$	$\frac{3e^{-\frac{1}{2}(a+b)t}}{2t}I_{\frac{3}{2}}\left(\frac{a-b}{2}t\right)$

	$F(s)$	$f(t)$
182	$\frac{(a-b)^{\frac{5}{2}}}{(\sqrt{s+a} + \sqrt{s+b})^{\frac{5}{2}}}$	$\frac{5e^{-\frac{1}{2}(a+b)t}}{2t} I_{\frac{5}{2}}\left(\frac{a-b}{2}t\right)$
183	$\frac{(a-b)^{\frac{7}{2}}}{(\sqrt{s+a} + \sqrt{s+b})^{\frac{7}{2}}}$	$\frac{7e^{-\frac{1}{2}(a+b)t}}{2t} I_{\frac{7}{2}}\left(\frac{a-b}{2}t\right)$
184	$\frac{(\sqrt{s+a} + \sqrt{s})^{-1}}{\sqrt{s}\sqrt{s+a}}$	$\frac{e^{-\frac{1}{2}at}}{\sqrt{a}} I_{\frac{1}{2}}\left(\frac{1}{2}at\right)$
185	$\frac{(\sqrt{s+a} + \sqrt{s})^{-3}}{\sqrt{s}\sqrt{s+a}}$	$\frac{e^{-\frac{1}{2}at}}{a^{\frac{3}{2}}} I_{\frac{3}{2}}\left(\frac{1}{2}at\right)$
186	$\frac{(\sqrt{s+a} + \sqrt{s})^{-5}}{\sqrt{s}\sqrt{s+a}}$	$\frac{e^{-\frac{1}{2}at}}{a^{\frac{5}{2}}} I_{\frac{5}{2}}\left(\frac{1}{2}at\right)$
187	$\frac{(\sqrt{s+a} + \sqrt{s})^{-7}}{\sqrt{s}\sqrt{s+a}}$	$\frac{e^{-\frac{1}{2}at}}{a^{\frac{7}{2}}} I_{\frac{7}{2}}\left(\frac{1}{2}at\right)$
188	$\frac{1}{(s^2 + a^2)^{\frac{5}{2}}}$	$\frac{\sqrt{\pi}}{\Gamma(\frac{5}{2})} \left(\frac{t}{2a}\right) J_2(at)$
189	$\frac{1}{(s^2 + a^2)^{\frac{7}{2}}}$	$\frac{\sqrt{\pi}}{\Gamma(\frac{7}{2})} \left(\frac{t}{2a}\right) J_3(at)$
190	$\frac{1}{(s^2 + a^2)^{\frac{9}{2}}}$	$\frac{\sqrt{\pi}}{\Gamma(\frac{9}{2})} \left(\frac{t}{2a}\right) J_4(at)$
191	$\frac{1}{(s^2 + a^2)^{\frac{11}{2}}}$	$\frac{\sqrt{\pi}}{\Gamma(\frac{11}{2})} \left(\frac{t}{2a}\right) J_5(at)$
192	$(\sqrt{s^2 + a^2} - s)$	$\frac{a}{t} J_1(at)$
193	$(\sqrt{s^2 + a^2} - s)^{\frac{3}{2}}$	$\frac{3a^{\frac{3}{2}}}{2t} J_{\frac{3}{2}}(at)$
194	$(\sqrt{s^2 + a^2} - s)^2$	$\frac{2a^2}{t} J_2(at)$
195	$(\sqrt{s^2 + a^2} - s)^{\frac{5}{2}}$	$\frac{5a^{\frac{5}{2}}}{2t} J_{\frac{5}{2}}(at)$
196	$(\sqrt{s^2 + a^2} - s)^3$	$\frac{3a^3}{t} J_3(at)$
197	$\frac{e^{-as}}{s^2}$	$(t-a)u(t-a)$

	$F(s)$	$f(t)$
198	$\frac{e^{-as}}{s^{\frac{3}{2}}}$	$\frac{\sqrt{t-a}}{\Gamma(\frac{3}{2})}u(t-a)$
199	$\frac{e^{-as}}{s^3}$	$\frac{(t-a)^2}{\Gamma(3)}u(t-a)$
200	$\frac{e^{\frac{a}{s}}}{\sqrt{s}}$	$\frac{\cosh 2\sqrt{at}}{\sqrt{\pi t}}$
201	$\frac{e^{\frac{a}{s}}}{s^{\frac{3}{2}}}$	$\frac{\sinh 2\sqrt{at}}{\sqrt{\pi a}}$
202	$\frac{e^{\frac{a}{s}}}{s^2}$	$\sqrt{\frac{t}{a}}I_1(2\sqrt{at})$
203	$\frac{e^{\frac{a}{s}}}{s^{\frac{5}{2}}}$	$\left(\frac{t}{a}\right)^2 I_{\frac{3}{2}}(2\sqrt{at})$
204	$\sqrt{s}e^{-a\sqrt{s}}$	$\frac{e^{-\frac{a^2}{4t}}}{4\sqrt{\pi t^3}}H_2\left(\frac{a}{2\sqrt{t}}\right)$
205	$se^{-a\sqrt{s}}$	$\frac{e^{-\frac{a^2}{4t}}}{8\sqrt{\pi t^4}}H_3\left(\frac{a}{2\sqrt{t}}\right)$
206	$s^{\frac{3}{2}}e^{-a\sqrt{s}}$	$\frac{e^{-\frac{a^2}{4t}}}{16\sqrt{\pi t^5}}H_4\left(\frac{a}{2\sqrt{t}}\right)$
207	$s^2e^{-a\sqrt{s}}$	$\frac{e^{-\frac{a^2}{4t}}}{32\sqrt{\pi t^6}}H_5\left(\frac{a}{2\sqrt{t}}\right)$
208	$\frac{e^{-b\sqrt{s}}}{a+\sqrt{s}}$	$\frac{1}{\sqrt{\pi t}}e^{-\frac{b^2}{4t}} - ae^{ab}e^{a^2t} \operatorname{erfc}\left(a\sqrt{t} + \frac{b}{2\sqrt{t}}\right)$
209	$\frac{ae^{-b\sqrt{s}}}{s(a+\sqrt{s})}$	$\operatorname{erfc}\left(\frac{b}{2\sqrt{t}}\right) - e^{ab}e^{a^2t} \operatorname{erfc}\left(a\sqrt{t} + \frac{b}{2\sqrt{t}}\right)$
210	$\frac{e^{-b\sqrt{s}}}{\sqrt{s}(a+\sqrt{s})}$	$e^{ab}e^{a^2t} \operatorname{erfc}\left(a\sqrt{t} + \frac{b}{2\sqrt{t}}\right)$
211	$\frac{e^{-b\sqrt{s(s+a)}}}{\sqrt{s(s+a)}}$	$e^{-\frac{1}{2}at}I_0\left(\frac{1}{2}a\sqrt{t^2-b^2}\right)u(t-b)$
212	$\frac{e^{-b\sqrt{s^2+a^2}}}{\sqrt{s^2+a^2}}$	$J_0(a\sqrt{t^2-b^2})u(t-b)$
213	$\frac{e^{-b\sqrt{s^2-a^2}}}{\sqrt{s^2-a^2}}$	$I_0(a\sqrt{t^2-b^2})u(t-b)$
214	$\frac{e^{-b(\sqrt{s^2+a^2}-s)}}{\sqrt{s^2+a^2}}$	$J_0(a\sqrt{t^2+2bt})$

	$F(s)$	$f(t)$
215	$e^{-bs} - e^{-b\sqrt{s^2+a^2}}$	$\frac{ab}{\sqrt{t^2-b^2}} J_1(a\sqrt{t^2-b^2})u(t-b)$
216	$e^{-b\sqrt{s^2-a^2}} - e^{-bs}$	$\frac{ab}{\sqrt{t^2-b^2}} I_1(a\sqrt{t^2-b^2})u(t-b)$
217	$\frac{ae^{-b\sqrt{s^2+a^2}}}{\sqrt{s^2+a^2}(\sqrt{s^2+a^2}+s)}$	$\sqrt{\frac{t-b}{t+b}} J_1(a\sqrt{t^2-b^2})u(t-b)$
218	$\frac{a^2 e^{-b\sqrt{s^2+a^2}}}{\sqrt{s^2+a^2}(\sqrt{s^2+a^2}+s)^2}$	$\left(\frac{t-b}{t+b}\right) J_2(a\sqrt{t^2-b^2})u(t-b)$
219	$\frac{a^3 e^{-b\sqrt{s^2+a^2}}}{\sqrt{s^2+a^2}(\sqrt{s^2+a^2}+s)^3}$	$\left(\frac{t-b}{t+b}\right)^{\frac{3}{2}} J_3(a\sqrt{t^2-b^2})u(t-b)$
220	$\frac{a^4 e^{-b\sqrt{s^2+a^2}}}{\sqrt{s^2+a^2}(\sqrt{s^2+a^2}+s)^4}$	$\left(\frac{t-b}{t+b}\right)^2 J_4(a\sqrt{t^2-b^2})u(t-b)$
221	$\frac{\ln s}{s^2}$	$\frac{t}{\Gamma(2)}[\Psi(2) - \ln t]$
222	$\frac{\ln s}{s^3}$	$\frac{t^2}{\Gamma(3)}[\Psi(3) - \ln t]$
223	$\frac{\ln s}{s^4}$	$\frac{t^3}{\Gamma(4)}[\Psi(4) - \ln t]$
224	$\frac{\ln s}{s-a}$	$e^{at}(\ln a + \text{Ei}(at))$
225	$\frac{\ln s}{s^2+1}$	$\cos t \text{ Si}(t) - \sin t \text{ Ci}(t)$
226	$\frac{s \ln s}{s^2+1}$	$-\sin t \text{ Si}(t) - \cos t \text{ Ci}(t)$
227	$\frac{\ln(s^2+a^2)}{s^2}$	$\frac{2}{a}(at \ln a + \sin at - at \text{ Ci}(at))$
228	$\ln\left(\frac{s^2-a^2}{s^2}\right)$	$\frac{2-2\cosh at}{t}$
229	$K_0(bs)$	$\frac{1}{\sqrt{t^2-b^2}}u(t-b)$
230	$K_0(b\sqrt{s})$	$\frac{1}{2t}e^{-\frac{b^2}{4t}}$
231	$\frac{1}{s}e^{bs}K_1(bs)$	$\frac{\sqrt{t(t+2b)}}{b}$

	$F(s)$	$f(t)$
232	$\frac{1}{\sqrt{s}} K_1(b\sqrt{s})$	$\frac{e^{-\frac{b^2}{4t}}}{b}$
233	$\frac{1}{\sqrt{s}} e^{\frac{b}{s}} K_0(\frac{b}{s})$	$\frac{2}{\sqrt{\pi t}} K_0(2\sqrt{2bt})$
234	$\pi e^{-bs} I_0(bs)$	$\frac{1}{\sqrt{t(2b-t)}} [u(t) - u(t-2b)]$
235	$e^{-bs} I_1(bs)$	$\frac{b-t}{\pi b \sqrt{t(2b-t)}} [u(t) - u(t-2b)]$

Reference:

- $u(t)$ is the Heaviside function
- $J_n(t)$ is the Bessel function of the first kind, of order n
- $I_n(t)$ is the modified Bessel function of the first kind, of order n
- $K_n(t)$ is the modified Bessel function of the second kind, of order n
- $H_n(t)$ is the n th Hermite polynomial
- $\text{Ei}(x)$ is the exponential integral function
- $\text{Si}(x)$ is the sine integral function
- $\text{Ci}(x)$ is the cosine integral function
- $\text{erf}(x)$ is the error function
- $\text{erfc}(x)$ is the complementary error function
- $\Gamma(x)$ is the gamma function
- $\Psi(x)$ is the logarithmic derivative of the gamma function