

Laplace transform correspondences

	$F(p) = \int_0^{\infty} s(t)e^{-pt} dt$	$s(t) = \lim_{\omega \rightarrow \infty} \frac{1}{2\pi j} \int_{\sigma-j\omega}^{\sigma+j\omega} F(p)e^{pt} dp$	with $s(t) = \begin{cases} s(t) & \text{for } t \geq 0 \\ 0 & \text{for } t < 0 \end{cases}$
1	0	0	
2	1	$\delta(t)$	↓
3	$\frac{1}{p}$	1	
4	$\frac{1}{p^2}$	t	↓
5	$\frac{1}{p^n} \quad n > 0$	$\frac{t^{n-1}}{(n-1)!}$	
6	$\frac{1}{(p-a)}$	$e^{at}$	↓
7	$\frac{1}{[p(p-a)]}$	$\frac{1}{a}(e^{at} - 1)$	
8	$\frac{1}{[p(p+a)]}$	$\frac{1}{a}(1 - e^{-at})$	↓
9	$\frac{p}{(p^2 + a^2)}$	$\sin(at)$	
10	$\frac{p}{(p^2 + a^2)}$	$\cos(at)$	↓
11	$\frac{a}{(p^2 - a^2)}$	$\sinh(at)$	
12	$\frac{p}{(p^2 - a^2)}$	$\cosh(at)$	↓
13	$\frac{1}{[p(p^2 + a^2)]}$	$\frac{1}{a^2}(1 - \cos(at))$	
14	$\frac{1}{[p(p^2 - a^2)]}$	$\frac{1}{a^2}(\cosh(at) - 1)$	↓
15	$\frac{1}{[(p-a)(p-b)]}$	$\frac{(e^{bt} - e^{at})}{(b-a)}$	
16	$\frac{1}{(p-a)^2}$	$t \cdot e^{at}$	↓
17	$\frac{p}{[(p-a)(p-b)]}$	$\frac{(be^{bt} - ae^{at})}{(b-a)}$	
18	$\frac{1}{p^2 + 2ap + b^2}$	$\frac{1}{2W}(e^{p_1 t} - e^{p_2 t}) = \frac{1}{\omega} e^{-at} \sin(\omega t)$ $p_{1,2} = -a \pm W = -a \pm j\omega$ $W = \sqrt{a^2 - b^2} = j\omega; \omega = \sqrt{b^2 - a^2}$	
19	$\frac{p}{p^2 + 2ap + b^2}$	$\frac{1}{2W}(p_1 e^{p_1 t} - p_2 e^{p_2 t}) = e^{-at}(\cos(\omega t) - \frac{a}{\omega} \cdot \sin(\omega t))$ $W, p_1, p_2$ as in 18)	