Table of Laplace Transforms

$f(t)$	$\mathcal{L}[f(t)] = F(s)$		$f(t)$	$\mathcal{L}[f(t)] = F(s)$	
1	$\dfrac{1}{s}$	(1)	$\dfrac{ae^{at} - be^{bt}}{a - b}$	$\dfrac{s}{(s-a)(s-b)}$	(19)
$e^{at}f(t)$	$F(s-a)$	(2)	te^{at}	$\dfrac{1}{(s-a)^2}$	(20)
$\mathcal{U}(t-a)$	$\dfrac{e^{-as}}{s}$	(3)	$t^n e^{at}$	$\dfrac{n!}{(s-a)^{n+1}}$	(21)
$f(t-a)\mathcal{U}(t-a)$	$e^{-as}F(s)$	(4)	$e^{at}\sin kt$	$\dfrac{k}{(s-a)^2 + k^2}$	(22)
$\delta(t)$	1	(5)	$e^{at}\cos kt$	$\dfrac{s-a}{(s-a)^2 + k^2}$	(23)
$\delta(t-t_0)$	e^{-st_0}	(6)	$e^{at}\sinh kt$	$\dfrac{k}{(s-a)^2 - k^2}$	(24)
$t^n f(t)$	$(-1)^n \dfrac{d^n F(s)}{ds^n}$	(7)	$e^{at}\cosh kt$	$\dfrac{s-a}{(s-a)^2 - k^2}$	(25)
$f'(t)$	$sF(s) - f(0)$	(8)	$t\sin kt$	$\dfrac{2ks}{(s^2 + k^2)^2}$	(26)
$f^n(t)$	$s^n F(s) - s^{(n-1)}f(0) -$		$t\cos kt$	$\dfrac{s^2 - k^2}{(s^2 + k^2)^2}$	(27)
	$\cdots - f^{(n-1)}(0)$	(9)	$t\sinh kt$	$\dfrac{2ks}{(s^2 - k^2)^2}$	(28)
$\displaystyle\int_0^t f(x)g(t-x)dx$	$F(s)G(s)$	(10)	$t\cosh kt$	$\dfrac{s^2 + k^2}{(s^2 - k^2)^2}$	(29)
$t^n \ (n = 0, 1, 2, \dots)$	$\dfrac{n!}{s^{n+1}}$	(11)	$\dfrac{\sin at}{t}$	$\arctan \dfrac{a}{s}$	(30)
$t^x \ (x \geq -1 \in \mathbb{R})$	$\dfrac{\Gamma(x+1)}{s^{x+1}}$	(12)	$\dfrac{1}{\sqrt{\pi t}} e^{-a^2/4t}$	$\dfrac{e^{-a\sqrt{s}}}{\sqrt{s}}$	(31)
$\sin kt$	$\dfrac{k}{s^2 + k^2}$	(13)	$\dfrac{a}{2\sqrt{\pi t^3}} e^{-a^2/4t}$	$e^{-a\sqrt{s}}$	(32)
$\cos kt$	$\dfrac{s}{s^2 + k^2}$	(14)	$\mathrm{erfc}\left(\dfrac{a}{2\sqrt{t}}\right)$	$\dfrac{e^{-a\sqrt{s}}}{s}$	(33)
e^{at}	$\dfrac{1}{s-a}$	(15)			
$\sinh kt$	$\dfrac{k}{s^2 - k^2}$	(16)			
$\cosh kt$	$\dfrac{s}{s^2 - k^2}$	(17)			
$\dfrac{e^{at} - e^{bt}}{a - b}$	$\dfrac{1}{(s-a)(s-b)}$	(18)			