Table of Laplace transforms

f in the t-domain	$F = \mathcal{L}\left\{f\right\}$ in the s-domain
1	$\frac{1}{s}$
t	$\frac{1}{s^2}$
$t^n, n \in \mathbb{Z}$	$\frac{n!}{s^{n+1}}$
$t^\alpha, \alpha > -1$	$\frac{\Gamma(\alpha+1)}{s^{\alpha+1}}$
e^{at}	$\frac{1}{s-a}$
$\sin(kt)$	$\frac{k}{s^2+k^2}$
$\cos(kt)$	$\frac{s}{s^2+k^2}$
$y'(t)$	$sY(s) - y(0)$
$y''(t)$	$s^2Y(s) - sy(0) - y'(0)$
$y^{(n)}(t)$	$s^nY(s) - s^{n-1}y(0) - \ldots - sy^{(n-2)}(0) - y^{(n-1)}(0)$
$e^{at}f(t)$	$F(s-a)$
$f(t-a)\mathcal{U}(t-a)$	$e^{-as}F(s)$
$f(t)\mathcal{U}(t-a)$	$e^{-as}\mathcal{L}\{f(t+a)\}$
$\mathcal{U}(t-a)$	$\frac{e^{-as}}{s}$
$\delta(t)$	1
$\delta(t-t_0),\ t_0 > 0$	e^{-st_0}
$t^n f(t)$	$(-1)^n \frac{d^n}{ds^n} F(s)$
$(f * g)(t) = \int_0^t f(\tau)g(t-\tau)\, d\tau$	$\mathcal{L}\left\{F\right\}(s) \cdot \mathcal{L}\left\{G\right\}(s)$