

Some standard Laplace transforms and calculation rules:

(schematically, $n \in \mathbb{N}_+$, $\omega \neq 0$, $a > 0$, $b \in \mathbb{R}$)

$F(s) = \mathcal{L}[f](s)$	$f(t)$
$sF(s) - f(0)$	$f'(t)$
$s^n F(s) - \sum_{k=0}^{n-1} s^k f^{(n-1-k)}(0)$	$f^{(n)}(t)$
$\frac{F(s)}{s}$	$\int_0^t f(\tau) d\tau$
$\frac{1}{a} F\left(\frac{s}{a}\right)$	$f(at)$
$F(s - b)$	$e^{bt} f(t)$
$e^{-as} F(s)$	$\begin{cases} f(t - a) & \text{if } t \geq a, \\ 0 & \text{if } t < a \end{cases}$
$\frac{1}{s^n}$	$\frac{t^{n-1}}{(n-1)!}$
$\frac{1}{s^2 + \omega^2}$	$\frac{1}{\omega} \sin(\omega t)$
$\frac{s}{s^2 + \omega^2}$	$\cos(\omega t)$
$\frac{1}{(s^2 + \omega^2)^2}$	$\frac{1}{2\omega^3} (\sin(\omega t) - \omega t \cos(\omega t))$
$\frac{s}{(s^2 + \omega^2)^2}$	$\frac{1}{2\omega} t \sin(\omega t)$