Table of Laplace Transforms

$f(t) = \mathcal{L}^{-1}\{F\}(t)$	$F(s) = \mathcal{L}\{f\}(s)$
1	$\frac{1}{s}$
e^{at}	$\frac{1}{s-a}$
$t^k \ (k \in \mathbb{N})$	$\frac{k!}{s^{k+1}}$
$\cos(bt)$	$\frac{s}{s^2+b^2}$
$\sin(bt)$	$\frac{b}{s^2+b^2}$
$e^{at}f(t)$	$F(s-a)$
$u_c(t)$	$\frac{e^{-cs}}{s}$
$f(t-c)u_c(t)$	$e^{-cs}F(s)$

Definition of Laplace transform:

$$\mathcal{L}\{f\}(s) = \int_0^\infty e^{-st} f(t)dt.$$

Derivative rules:

$$\mathcal{L}\{y'\} = s\mathcal{L}\{y\} - y(0)$$
$$\mathcal{L}\{y''\} = s^2\mathcal{L}\{y\} - sy(0) - y'(0)$$