

## Laplace Transforms

Derrick and Grossman, Elementary DE, Table 6-3, page 279

$f(t)$	$\mathcal{L}\{f(t)\}$
$c$	$\frac{c}{s}$
$t^n$	$\frac{n!}{s^{n+1}}$
$\sin bt$	$\frac{b}{s^2 + b^2}$
$\cos bt$	$\frac{s}{s^2 + b^2}$
$\sinh bt$	$\frac{b}{s^2 - b^2}$
$\cosh bt$	$\frac{s}{s^2 - b^2}$

$f'(t)$	$s\mathcal{L}\{f(t)\} - f(0)$
$f''(t)$	$s^2\mathcal{L}\{f(t)\} - sf(0) - f'(0)$

$f(t)$	$\mathcal{L}\{f(t)\}$
$e^{at}$	$\frac{1}{s - a}$
$e^{at}t^n$	$\frac{n!}{(s - a)^{n+1}}$
$e^{at}\sin bt$	$\frac{b}{(s - a)^2 + b^2}$
$e^{at}\cos bt$	$\frac{s - a}{(s - a)^2 + b^2}$
$e^{at}\sinh bt$	$\frac{b}{(s - a)^2 - b^2}$
$e^{at}\cosh bt$	$\frac{s - a}{(s - a)^2 - b^2}$

$tf(t)$	$-\frac{d}{ds}\mathcal{L}\{f(t)\}$
$t^n f(t)$	$(-1)^n \frac{d^n}{ds^n}\mathcal{L}\{f(t)\}$