

For any constants  $C$ ,  $a$ ,  $\omega$ , and  $k \in \mathbb{N}$  we have the Laplace Transforms of the following functions  $y(t)$ :

$y(t) = C$	$\mathcal{L}\{C\} = \frac{C}{s}$	Constant
$y(t) = e^{at}$	$\mathcal{L}\{e^{at}\} = \frac{1}{s-a}$	Exponential Function
$y(t) = \cos(\omega t)$	$\mathcal{L}\{\cos \omega t\} = \frac{s}{s^2 + \omega^2}$	Cosine
$y(t) = \sin(\omega t)$	$\mathcal{L}\{\sin \omega t\} = \frac{\omega}{s^2 + \omega^2}$	Sine
$y(t) = t^k$	$\mathcal{L}\{t^k\} = \frac{k!}{s^{k+1}}$	Power Function
$y(t) = e^{at}f(t)$	$\mathcal{L}\{e^{at}f(t)\} = F(s-a)$	First Shift Theorem