

## Laplace Transform pairs

Signal	Transform
Unit step: $u(t)$	$\frac{1}{s}$
Unit impulse: $\delta(t)$	1
Unit ramp: $tu(t)$	$\frac{1}{s^2}$
$e^{-at}u(t)$	$\frac{1}{s+a}$
$t^n e^{-at}u(t)$	$\frac{n!}{(s+a)^{n+1}}$
$(\cos \omega_o t)u(t)$	$\frac{s}{(s^2 + \omega_o^2)}$
$(\sin \omega_o t)u(t)$	$\frac{\omega_o}{(s^2 + \omega_o^2)}$
$(e^{-at} \cos \omega_o t)u(t)$	$\frac{s+a}{((s+a)^2 + \omega_o^2)}$
$(e^{-at} \sin \omega_o t)u(t)$	$\frac{\omega_o}{((s+a)^2 + \omega_o^2)}$
$(t \cos \omega_o t)u(t)$	$\frac{s^2 - \omega_o^2}{(s^2 + \omega_o^2)^2}$
$(t \sin \omega_o t)u(t)$	$\frac{2\omega_o s}{(s^2 + \omega_o^2)^2}$