

BASIC LAPLACE TRANSFORM PAIRS

SIGNAL	WAVEFORM $f(t)$	TRANSFORM $F(s)$
Impulse	$\delta(t)$	1
Step Function	$u(t)$	$\frac{1}{s}$
Ramp	$tu(t)$	$\frac{1}{s^2}$
Exponential	$[e^{\alpha t}]f(t)$	$\frac{1}{s+\alpha}$
Damped Ramp	$[te^{\alpha t}]u(t)$	$\frac{1}{(s+\alpha)^2}$
Sine	$[\sin \beta t]u(t)$	$\frac{\beta}{s^2+\beta^2}$
Cosine	$[\cos \beta t]u(t)$	$\frac{s}{s^2+\beta^2}$
Damped Sine	$[e^{\alpha t} \sin \beta t]u(t)$	$\frac{\beta}{(s+\alpha)^2+\beta^2}$
Damped Cosine	$[e^{\alpha t} \cos \beta t]u(t)$	$\frac{(s+\alpha)}{(s+\alpha)^2+\beta^2}$
Simple Complex Poles	$[2 k e^{-\alpha t} \cos(\beta t+\angle k)]u(t)$	$\frac{k}{s+\alpha-j\beta} + \frac{k^*}{s+\alpha+j\beta}$
Double Complex Poles	$[2 k te^{-\alpha t} \cos(\beta t+\angle k)]u(t)$	$\frac{k}{(s+\alpha-j\beta)^2} + \frac{k^*}{(s+\alpha+j\beta)^2}$