Elementary Laplace Transforms[1]

$f(t)$	$F(s)$	Notes
$f(t)$	$\int_0^\infty e^{-st} f(t)\, dt$	definition
k	$\frac{k}{s}$	k is constant, $s > 0$
e^{at}	$\frac{1}{s-a}$	$s > a$
t^n	$\frac{n!}{s^{n+1}}$	$n = 1, 2, \ldots;\ s > 0$
t^p	$\frac{\Gamma(p+1)}{s^{p+1}}$	$p > -1$, $s > 0$, Γ is the gamma function
$\sin at$	$\frac{a}{s^2+a^2}$	$s > 0$
$\cos at$	$\frac{s}{s^2+a^2}$	$s > 0$
$\sinh at$	$\frac{a}{s^2-a^2}$	$s > \|a\|$
$\cosh at$	$\frac{s}{s^2-a^2}$	$s > \|a\|$
$e^{at}\sin bt$	$\frac{b}{(s-a)^2+b^2}$	$s > a$
$e^{at}\cos bt$	$\frac{s-a}{(s-a)^2+b^2}$	$s > a$
$t^n e^{at}$	$\frac{n!}{(s-a)^{n+1}}$	$n = 1, 2, \ldots;\ s > a$
$u_c(t)$	$\frac{e^{-cs}}{s}$	$s > 0$, u_c is a unit step function
$u_c(t)f(t-c)$	$e^{-cs}F(s)$	u_c is a unit step function
$e^{ct}f(t)$	$F(s-c)$	shifting property
$f(ct)$	$\frac{1}{c}F\left(\frac{s}{c}\right)$	$c > 0$
$\int_0^t f(t-\tau)g(\tau)\, d\tau$	$F(s)\, G(s)$	convolution integral
$\delta(t-c)$	e^{-cs}	δ is the Dirac delta function
$f^{(n)}(t)$	$s^n F(s) - s^{n-1} f(0) - \cdots - f^{(n-1)}(0)$	
$(-1)^n f(t)$	$F^{(n)}(s)$	

[1] Adapted from *Elementary Differential Equations and Boundary Value Problems*, 7th edition, William E. Boyce and Richard C. DiPrima, John Wiley & Sons, Inc., New York, 2001, p. 304