Laplace transform tables.

$f(t)$	$\mathcal{L}\{f(t)\}$
$\sin kt$	$\dfrac{k}{s^2+k^2}$
$\cos kt$	$\dfrac{s}{s^2+k^2}$
e^{at}	$\dfrac{1}{s-a}$
$\sinh kt$	$\dfrac{k}{s^2-k^2}$
$\cosh kt$	$\dfrac{s}{s^2-k^2}$
$e^{at}f(t)$	$F(s-a)$
$\displaystyle\int_0^t f(\tau)g(t-\tau)d\tau$	$F(s)G(s)$
t^α	$\dfrac{\Gamma(\alpha+1)}{s^{\alpha+1}}, \alpha > -1$
t^n	$\dfrac{n!}{s^{\alpha+1}},\ n$ a positive integer
$t^n f(t)$	$(-1)^n \dfrac{d^n}{ds^n}F(s)$
$f^{(n)}(t)$	$s^nF(s) - s^{(n-1)}f(0) - ... - f^{(n-1)}(0)$

Useful formulas.

$$\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$$
$$\sin(A \pm B) = \sin A \cos B \pm \sin B \cos A$$
$$\cos A \cos B = [\cos(A+B) + \cos(A-B)]/2$$
$$\sin A \sin B = [\cos(A-B) - \cos(A+B)]/2$$
$$\cos^2 x + \sin^2 x = 1$$
$$\cos x = \frac{e^{ix}+e^{-ix}}{2} \qquad \sin x = \frac{e^{ix}-e^{-ix}}{2i}$$
$$\cosh x = \frac{e^{x}+e^{-x}}{2} \qquad \sinh x = \frac{e^{x}-e^{-x}}{2}$$

$\Gamma(x) = \displaystyle\int_0^\infty t^{x-1}e^{-t}dt,$ recurrence relation: $\Gamma(x+1) = x\Gamma(x)$. Convergence requirement: $x-1 > -1$ or $x > 0$.