

MATH 2065

A short table of Laplace transforms and inverse Laplace transform

1	$\mathcal{L}(af(t) + bg(t))(s) = aF(s) + bG(s)$
2	$\mathcal{L}(e^{at}f(t))(s) = F(s - a)$
3	$\mathcal{L}(-tf(t))(s) = \frac{d}{ds}F(s)$
4	$\mathcal{L}(1)(s) = \frac{1}{s}$
5	$\mathcal{L}(t^n)(s) = \frac{n!}{s^{n+1}}$
6	$\mathcal{L}(e^{at})(s) = \frac{1}{s - a}$
7	$\mathcal{L}(\cos(bt))(s) = \frac{s}{s^2 + b^2}$
8	$\mathcal{L}(\sin(bt))(s) = \frac{b}{s^2 + b^2}$
9	$\mathcal{L}(f'(t))(s) = sF(s) - f(0)$
10	$\mathcal{L}(f * g(t))(s) = F(s)G(s)$
11	$\mathcal{L}^{-1}\left(\frac{1}{(s^2 + 1)^2}\right)(t) = \frac{1}{2}(\sin(t) - t \cos(t))$
12	$\mathcal{L}^{-1}\left(\frac{s}{(s^2 + 1)^2}\right)(t) = \frac{1}{2}t \sin(t)$