

Propiedades de la transformada de Laplace

1	$\mathcal{L}[Af(t)] = AF(s)$
2	$\mathcal{L}[f_1(t) \pm f_2(t)] = F_1(s) \pm F_2(s)$
3	$\mathcal{L}_\pm \left[\frac{d}{dt} f(t) \right] = sF(s) - f(0^\pm)$
4	$\mathcal{L}_\pm \left[\frac{d^2}{dt^2} f(t) \right] = s^2 F(s) - sf(0^\pm) - \dot{f}(0^\pm)$
5	$\mathcal{L}_\pm \left[\frac{d^n}{dt^n} f(t) \right] = s^n F(s) - \sum_{k=1}^n s^{n-k} f^{(k-1)}(0^\pm)$ en donde $f^{(k-1)}(t) = \frac{d^{k-1}}{dt^{k-1}} f(t)$
6	$\mathcal{L}_\pm \left[\int f(t) dt \right] = \frac{F(s)}{s} + \frac{1}{s} \left[\int f(t) dt \right]_{t=0^\pm}$
7	$\mathcal{L}_\pm \left[\int \dots \int f(t)(dt)^n \right] = \frac{F(s)}{s^n} + \sum_{k=1}^n \frac{1}{s^{n-k+1}} \left[\int \dots \int f(t)(dt)^k \right]_{t=0^\pm}$
8	$\mathcal{L} \left[\int_0^t f(t) dt \right] = \frac{F(s)}{s}$
9	$\int_0^\infty f(t) dt = \lim_{s \rightarrow 0} F(s)$ si $\int_0^\infty f(t) dt$ existe
10	$\mathcal{L}[e^{-at} f(t)] = F(s + a)$
11	$\mathcal{L}[f(t - \alpha)1(t - \alpha)] = e^{-\alpha s} F(s) \quad \alpha \geq 0$
12	$\mathcal{L}[tf(t)] = -\frac{dF(s)}{ds}$
13	$\mathcal{L}[t^2 f(t)] = \frac{d^2}{ds^2} F(s)$
14	$\mathcal{L}[t^n f(t)] = (-1)^n \frac{d^n}{ds^n} F(s) \quad n = 1, 2, 3, \dots$
15	$\mathcal{L} \left[\frac{1}{t} f(t) \right] = \int_s^\infty F(s) ds$ si $\lim_{s \rightarrow 0} \frac{1}{t} f(t)$ existe
16	$\mathcal{L} \left[f \left(\frac{t}{a} \right) \right] = aF(as)$
17	$\mathcal{L} \left[\int_0^t f_1(t - \tau) f_2(\tau) d\tau \right] = F_1(s) F_2(s)$
18	$\mathcal{L}[f(t)g(t)] = \frac{1}{2\pi j} \int_{c-j\infty}^{c+j\infty} F(p)G(s-p) dp$