

Propiedades:

Sea $F(s) = \mathcal{L}[f(t)](s)$ y $G(s) = \mathcal{L}[g(t)](s)$.

$$1. \mathcal{L}[e^{at}] = \frac{1}{s-a}.$$

$$2. \mathcal{L}[\text{sen}(at)] = \frac{a}{s^2 + a^2}.$$

$$3. \mathcal{L}[\cos(at)] = \frac{s}{s^2 + a^2}.$$

$$4. \mathcal{L}[t^k] = \frac{k!}{s^{k+1}}, k \in \mathbb{Z}.$$

$$5. \mathcal{L}[e^{at}f(t)] = F(s-a).$$

$$6. \mathcal{L}[H_a(t)] = \frac{1}{s} e^{-as}.$$

$$7. \mathcal{L}[H_a(t)f(t-a)] = e^{-as}F(s).$$

$$8. \mathcal{L}[\int_a^t f(u)du] = \frac{1}{s}F(s) - \frac{1}{s} \int_0^a f(u)du.$$

$$9. \mathcal{L}[t^n f(t)] = (-1)^n \frac{d^n}{ds^n} F(s).$$

$$10. \mathcal{L}\left[\frac{f(t)}{t}\right] = \int_s^\infty F(u)du.$$

$$11. \mathcal{L}[f * g] = F(s)G(s).$$

$$12. \mathcal{L}[f^{(n)}(t)](s) = s^n F(s) - \sum_{j=0}^{n-1} s^j f^{(n-j-1)}(0^+).$$

$$13. \text{ Si } f(t) = \frac{1}{a}\text{sen}(at) - t \cos(at), \text{ entonces } \mathcal{L}(f(t))(s) = \frac{2a^2}{(s^2 + a^2)^2}, a \neq 0.$$