

**TRANSFORMADA DE LAPLACE.
FORMULARIO**

1. $\mathcal{L}\{f(t)\} = \int_0^{\infty} e^{-st} f(t) dt = F(s)$
2. $\mathcal{L}\{1\} = \frac{1}{s}$
3. $\mathcal{L}\{t^n\} = \frac{n!}{s^{n+1}}, n = 1, 2, 3, \dots$
4. $\mathcal{L}\{t^{1/2}\} = \frac{\sqrt{\pi}}{2s^{3/2}}$
5. $\mathcal{L}\{t^{-1/2}\} = \sqrt{\frac{\pi}{s}}$
6. $\mathcal{L}\{e^{at}\} = \frac{1}{s-a}$
7. $\mathcal{L}\{\text{sen } kt\} = \frac{k}{s^2 + k^2}$
8. $\mathcal{L}\{\text{cos } kt\} = \frac{s}{s^2 + k^2}$
9. $\mathcal{L}\{\text{sinh } kt\} = \frac{k}{s^2 - k^2}$
10. $\mathcal{L}\{\text{cosh } kt\} = \frac{s}{s^2 - k^2}$
11. $\mathcal{L}\{e^{at} f(t)\} = F(s-a) \quad a \in \Re$
12. $\mathcal{U}(t-a) = \begin{cases} 0, & 0 \leq t < a \\ 1, & t \geq a \end{cases}$
13. $\mathcal{L}\{f(t-a)\mathcal{U}(t-a)\} = e^{-as} F(s)$
14. $\mathcal{L}\{g(t)\mathcal{U}(t-a)\} = e^{-as} \mathcal{L}\{g(t+a)\}$
15. $\mathcal{L}\{t^n f(t)\} = (-1)^n \frac{d^n}{ds^n} [F(s)]$
16. $\mathcal{L}\{f^{(n)}(t)\} = s^n F(s) - s^{n-1} f(0) - s^{n-2} f'(0) - \dots - f^{(n-1)}(0)$
17. $f * g = \int_0^t f(\tau) g(t-\tau) d\tau$
18. $\mathcal{L}(f * g) = \mathcal{L}[f(t)] \cdot \mathcal{L}[g(t)] = F(s)G(s),$
19. $\mathcal{L}\{\delta(t-t_0)\} = e^{-st_0} \quad t_0 \neq 0$
20. $\mathcal{L}\{\delta(t)\} = 1 \quad t_0 = 0$
21. $\mathcal{L}\{f(t)\} = \frac{1}{1-e^{-sT}} \int_0^T e^{-st} f(t) dt$ donde $f(t)$ es función periódica y T el período