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Teoría del Control   29/08/23
Transformada de Laplace

$$f(t) = A \cos(wt)$$

$$F(s) = \mathcal{L}\{A\cos(wt)\} = \int_0^\infty e^{-st} A \cos(wt)\, dt$$

$$F(s) = A \int_0^\infty \cos(wt)\, e^{-st}\, dt \Rightarrow \quad \mathcal{L}\{\cos(wt)\} \Rightarrow$$

$$F(s) = A \cdot \frac{s}{s^2 + w^2} \int_0^\infty e^{-st}\, dt \qquad\qquad \frac{s}{s^2 + w^2}$$

$$F(s) = A \cdot \frac{\cancel{s}}{s^2 + w^2} \cdot \frac{1}{\cancel{s}}$$

$$\boxed{F(s) = \frac{A}{s^2 + w^2}} \qquad\qquad \int_0^\infty e^{-st}\, dt = \frac{1}{s}$$

Entonces:

$$\mathcal{L}\{A\cos(wt)\} = \frac{A}{s^2 + w^2}$$