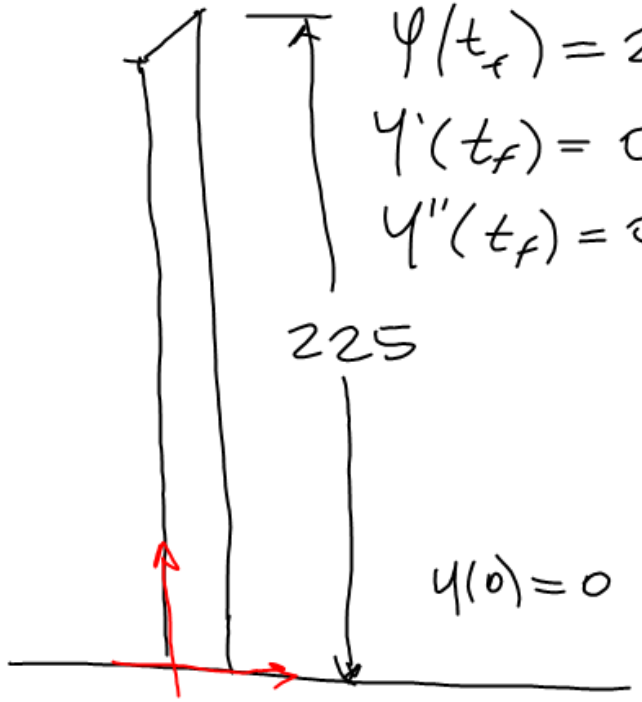
TORRE MAYOR



$y(t_f) = 225$

$y'(t_f) = 0$ sacudida

$y''(t_f) = 0$

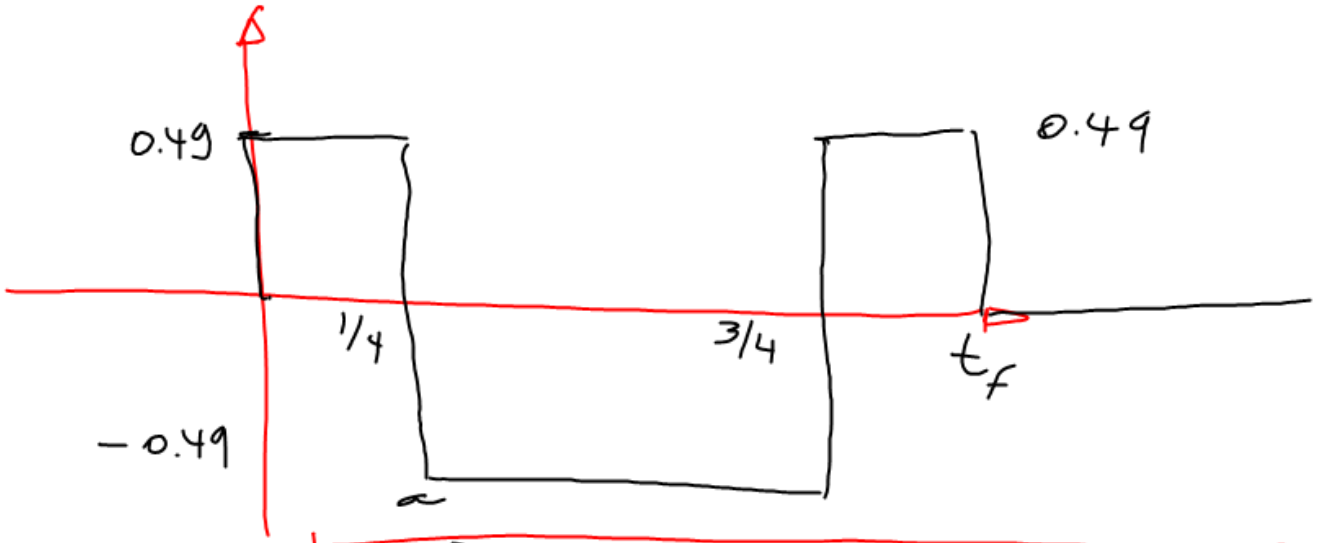
$\frac{d^3y}{dt^3} = 1.6 \text{ ft/seg}^3$

$\downarrow$

0.49 m/seg^3

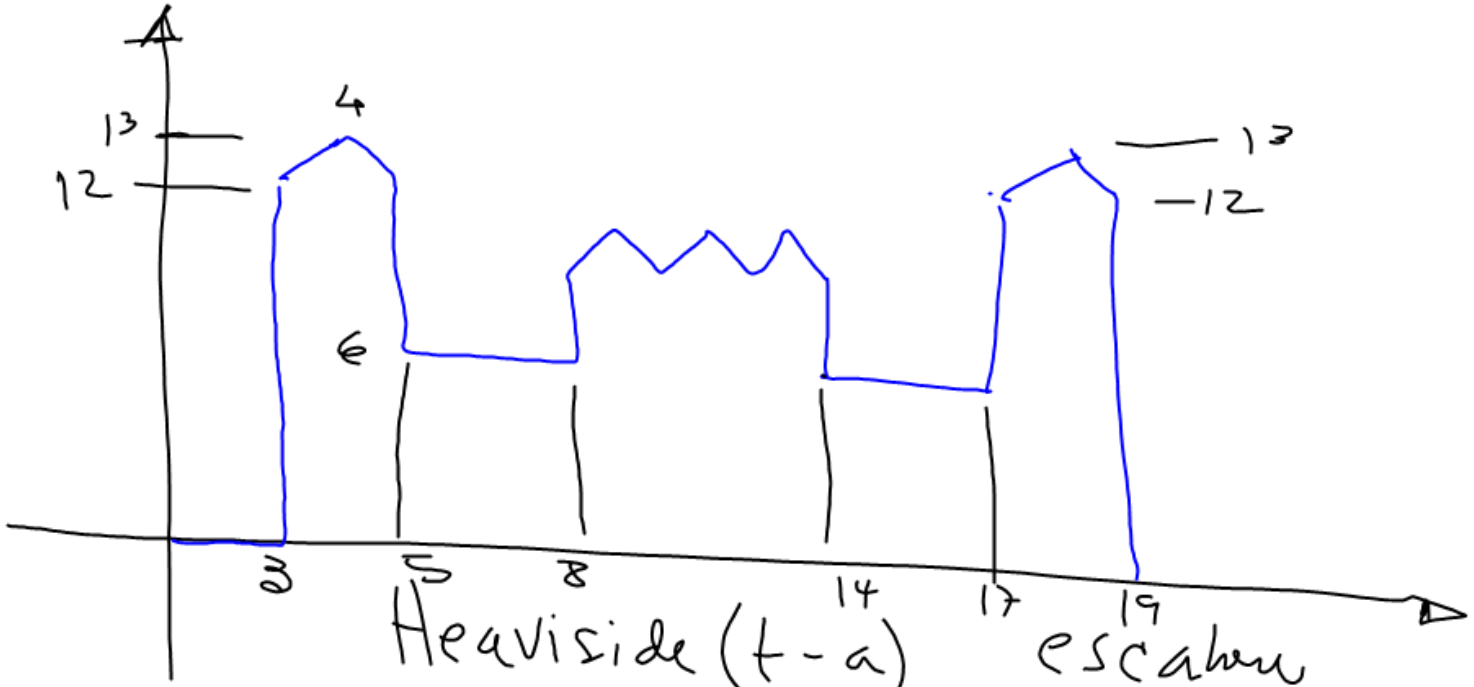
$y(0) = 0 \quad y'(0) = 0 \quad y''(0) = 0$

GRÁFICA DE SACUDIDA



$$\frac{d^3y}{dt^3} = 0.49\,u(t) - 2(0.49)\,u(t-a) +$$

$$+ 2(0.49)\,u(t-3a) - 0.49\,u(t-4a)$$



Heaviside (t-a) escalon

(t-a) Heaviside (t-a) rampa

$$\frac{d^2y}{dx^2} - \frac{dy}{dx} - 6y = 6e^{3t} + 2e^{-2t}$$

$$y(0) = 0 \quad y'(0) = \frac{4}{5}$$

$$\mathcal{L}\left\{\frac{d^2y}{dx^2}\right\} - \mathcal{L}\left\{\frac{dy}{dx}\right\} - 6\mathcal{L}\{y\} = 6\mathcal{L}\{e^{3t}\} + 2\mathcal{L}\{e^{-2t}\}$$

$$\left(s^2\mathcal{L}\{y\} - s\cdot y(0) - y'(0)\right) - \left(s\mathcal{L}\{y\} - (0)\right) - 6\mathcal{L}\{y\} = \frac{6}{s-3} + \frac{2}{s+2}$$

$$(s^2 - s - 6)\mathcal{L}\{y\} - \frac{4}{5} = \frac{6}{s-3} + \frac{2}{s+2}$$

$$(s^2 - s - 6)\mathcal{L}\{y\} = \frac{6}{s-3} + \frac{2}{s+2} + \frac{4}{5}$$

$$= \frac{6(s+2) + 2(s-3) + \frac{4}{5}(s-3)(s+2)}{(s-3)(s+2)}$$

$$\mathcal{L}\{y\} = \frac{6s + 12 + 2s - 6 + \frac{4}{5}(s^2 - s - 6)}{(s-3)(s+2)(s^2 - s - 6)}$$

$$= \frac{\frac{4}{5}s^2 + \left(8 - \frac{4}{5}\right)s + \left(\frac{4}{5}\times 6 + 6\right)}{(s-3)(s+2)(s^2 - s - 6)}$$