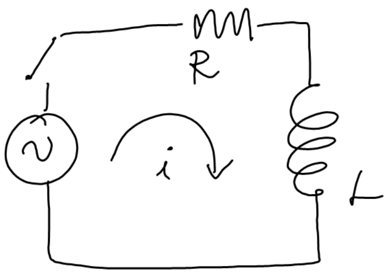


$$L\frac{di}{dt} + Ri = 220\cos(60t)\,u(t-a)$$

$$i(0) = 0$$

función escalon unitario

$$u(t-a) = \begin{cases} 0 & ; t \leq a \\ 1 & ; t > a \end{cases}$$

$$\mathcal{L}\{u(t-a)\} = \int_0^\infty e^{-st} u(t-a)\,dt$$

$$= \int_0^a e^{-st}(0)\,dt + \int_a^\infty e^{-st}(1)\,dt$$

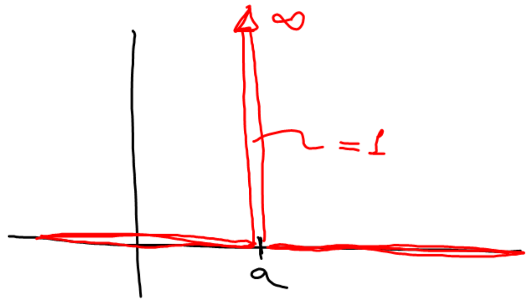
$$= \left.\frac{e^{-st}}{-s}\right]_a^\infty \Rightarrow -\left(-\frac{e^{-sa}}{s}\right)$$

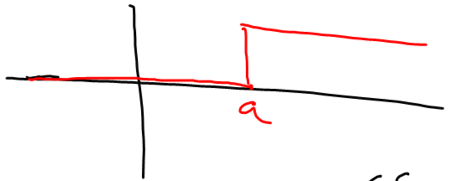
$$\boxed{\mathcal{L}\{u(t-a)\} = \frac{e^{-as}}{s}}$$

$$\mathcal{L}\{f(t-a)u(t-a)\} = e^{-as}F(s)$$

$$\mathcal{L}\{t^2 u(t-a)\} = e^{-as} \cdot \frac{2!}{s^3}$$

$$\delta(t-a) = \begin{cases} 0; & t \neq a \\ \int_{-\infty}^{\infty} \delta(t-a)\,dt = 1 \end{cases}$$





$$\mathcal{L}\{u(t-a)\} = \frac{e^{-as}}{s}$$

$$\mathcal{L}\{u'(t-a)\} = s\,\mathcal{L}\{u(t-a)\} - \cancel{u_0}^{\,0}$$

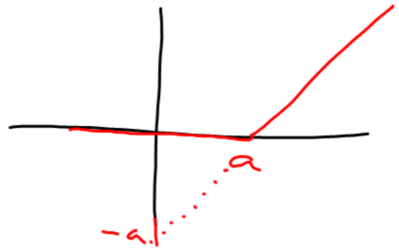
$$= \cancel{s}\left(\frac{e^{-as}}{\cancel{s}}\right) e^{-as}$$

$$\mathcal{L}\{\delta(t-a)\} = e^{-as}$$

$$\mathcal{L}\{u'(t-a)\} = \mathcal{L}\{\delta(t-a)\}$$

$$u'(t-a) = \delta(t-a).$$

$$r(t-a) = \begin{cases} 0 \,; & t \leq a \\ (t-a)\,; & t > a \end{cases}$$



$$\mathcal{L}\{r'(t-a)\} = s\mathcal{L}\{r(t-5)\} - \cancelto{0}{r_0}$$

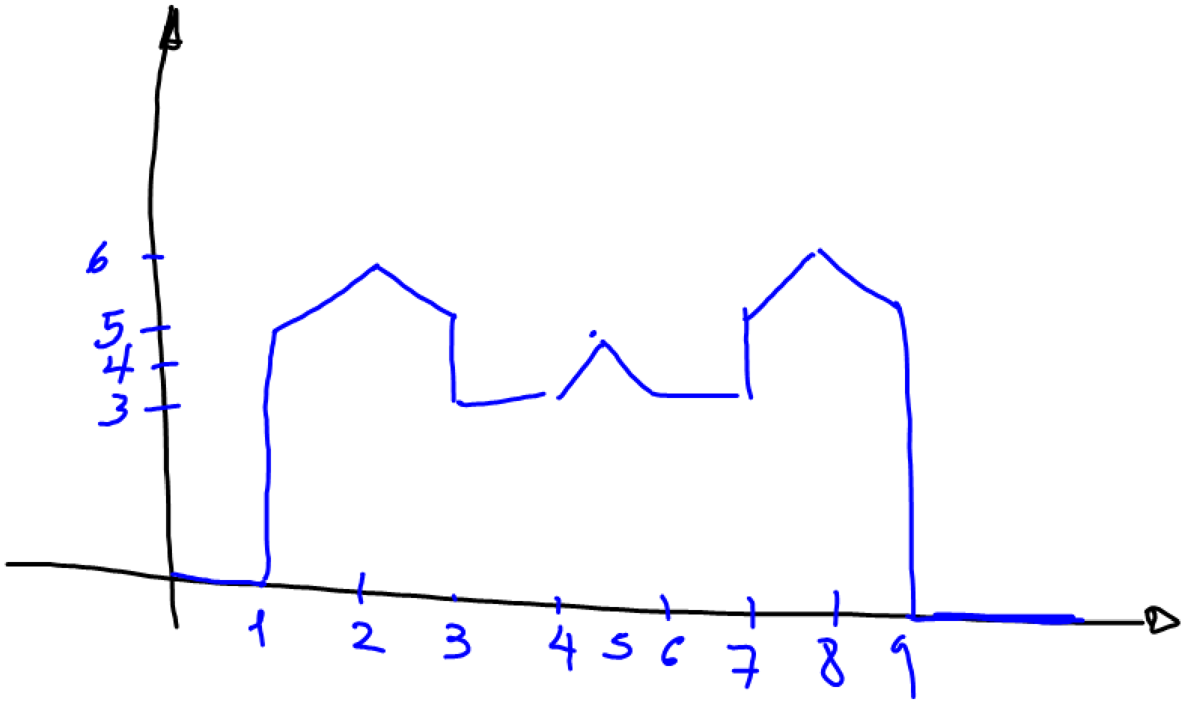
$$= s\left(\frac{e^{-5s}}{s^2}\right)$$

$$\mathcal{L}\{r'(t-a)\} = \frac{e^{-5s}}{s}$$

$$\mathcal{L}\{u(t-a)\} = \frac{e^{-5s}}{s}$$

$$\mathcal{L}\{r'(t-a)\} = \mathcal{L}\{u(t-a)\}$$

$$r'(t-a) = u(t-a).$$


6
5
4
3
1
2
3
4
5
6
7
8
9

posición. $y(t)$

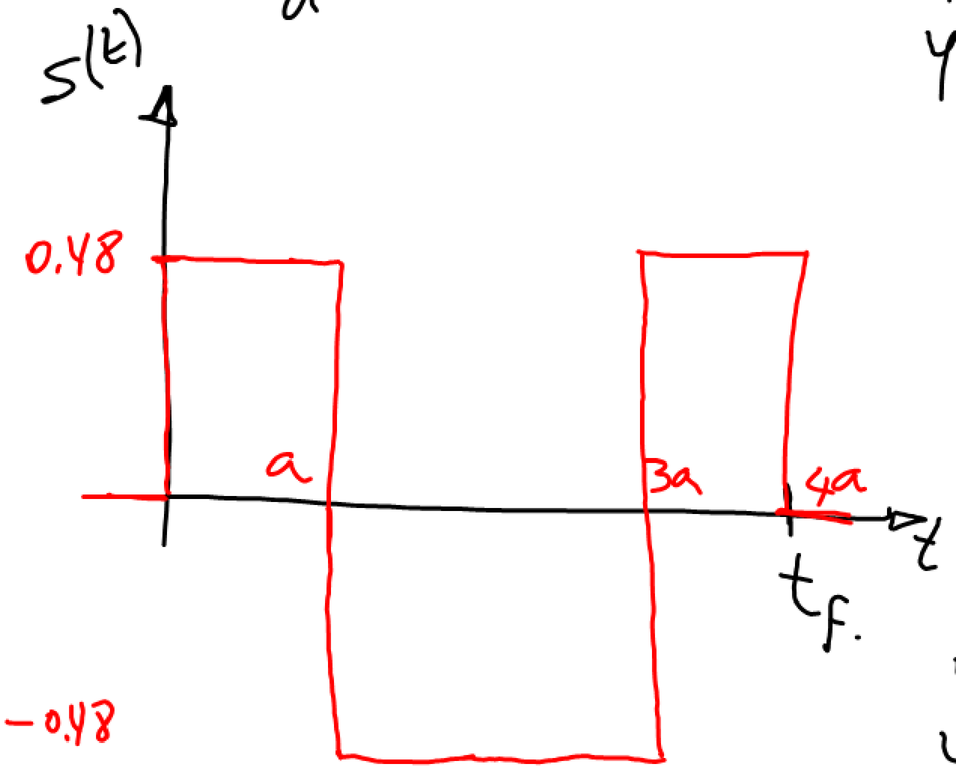
velocidad $\frac{dy}{dt}$

aceleración $\frac{dv}{dt} \Rightarrow \frac{d^2y}{dt^2}$

Sacudida $\frac{da}{dt} \Rightarrow \frac{d^3y}{dt^3}$

$s(t) \leq 1.6\ ft/seg^3 \Rightarrow 0.4864\ \frac{m}{s^3}$

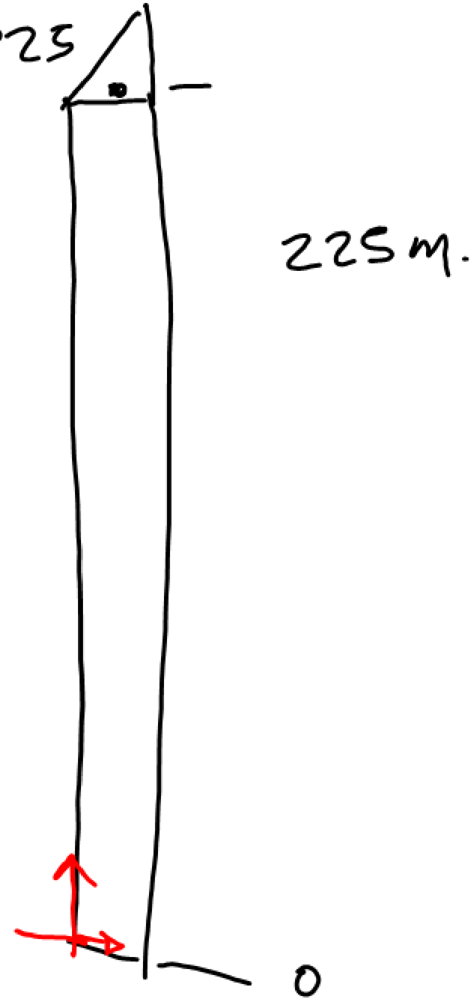
$$\frac{d^3 y}{dt^3} = s(t)$$



$y(t_f) = 225$

$y'(t_f) = 0$

$y''(t_f) = 0$



$y(0) = 0$

$y'(0) = 0$

$y''(0) = 0$