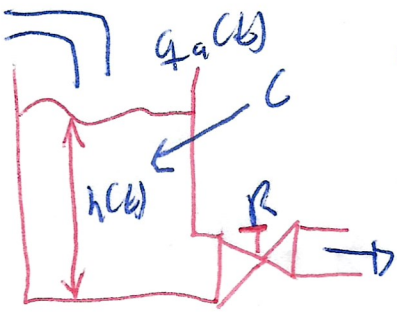
Problema



$C = 10$ lts

$R = \frac{1}{2}$

$q_a(t) = 5$ lts/seg

$$\frac{\frac{1}{\tau}}{s + \frac{1}{\tau}}$$

Llevamos la FT a su forma general

Modelo 1

$$K = \lim_{s \to 0} G(s) = 1 \qquad \frac{Q_b(s)}{Q_a(s)} = \frac{1}{sCR+1} \cdot \frac{\frac{1}{CR}}{\frac{1}{CR}} = \frac{1\,\frac{1}{CR}}{s + \frac{1}{CR}}$$

$$\frac{1}{\tau} = \frac{1}{CR} \Rightarrow \tau = CR$$

$$\tau = 10 \text{ lts} = 5 \text{ seg}$$

Modelo 2

$$K = \lim_{s \to 0} G(s) = R \qquad \frac{H(s)}{Q_a(s)} = \frac{R}{sCR+1} \cdot \frac{\frac{1}{CR}}{\frac{1}{CR}} = \frac{R\,\frac{1}{CR}}{s + \frac{1}{CR}}$$

Para una Rampa

Modelo 1

$$c(t) = \left(t - \tau + \tau e^{-\frac{t}{\tau}}\right) \cdot 1 \cdot 5$$

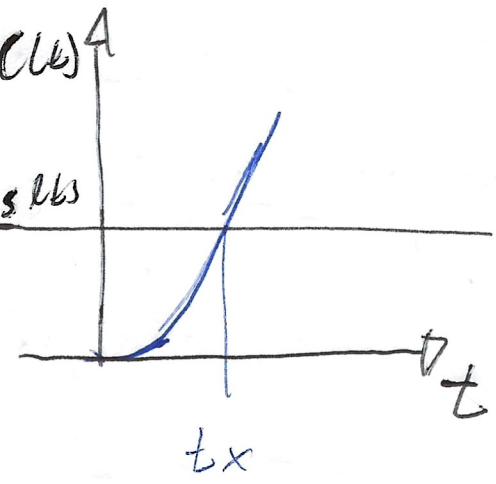
Modelo 2

$$c(t) = \left(t - \tau + \tau e^{-\frac{t}{\tau}}\right) \cdot \frac{1}{2} \cdot 5$$

Modelo 1

t	$C(t)$
0	0
$\tau/2$	2.66
τ	9.19
2τ	28.38
3τ	51.24
4τ	75.45
5τ	100.168
6τ	125.06

Modelo 1



Modelo 2

t	$C(t)$
0	0
$\tau/2$	1.33
τ	4.59
2τ	14.19
3τ	25.62
4τ	37.72
5τ	50.08
6τ	62.53

Modelo 2