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Problema # 3

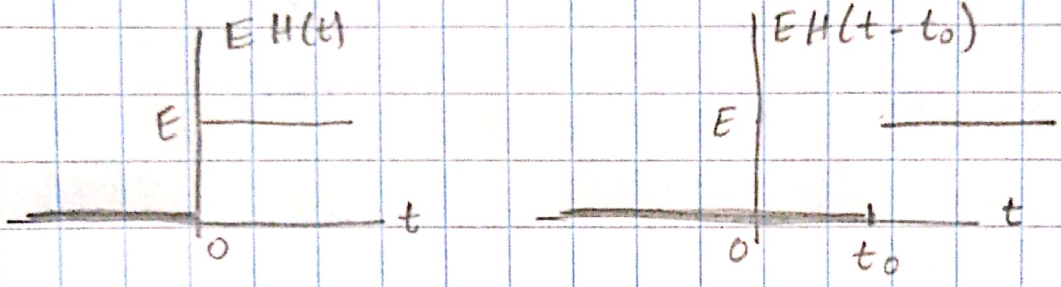
5/25

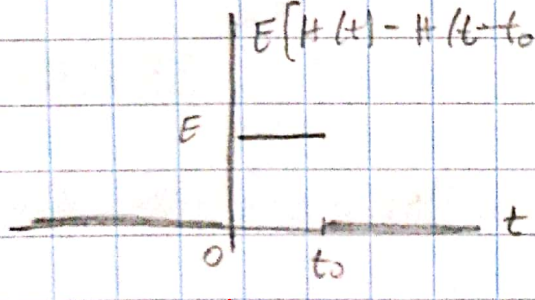
24/02/2021

$y(t) = E[H(t) - H(t-t_0)]$

$g(t)$ función de peso de clase P_{T_1}

Calcular $X(5) = \int_{-\infty}^{\infty} g(\tau)\, y(5-\tau)\, d\tau$





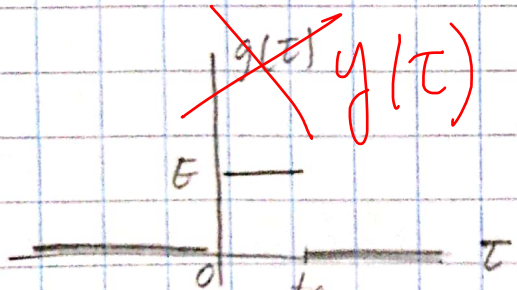
P_{T_1}

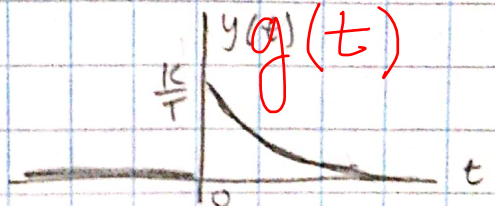
$h(t) = K(1 - e^{-t/T})$, $t > 0$

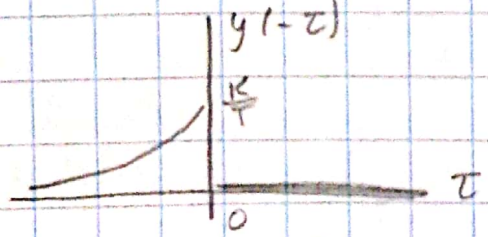
función de peso

$y(t) = \frac{dh}{dt}$

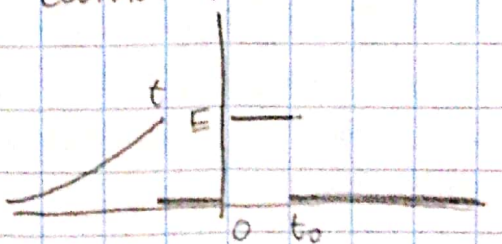
$y(t) = \frac{K}{T} e^{-t/T}$, $t > 0$





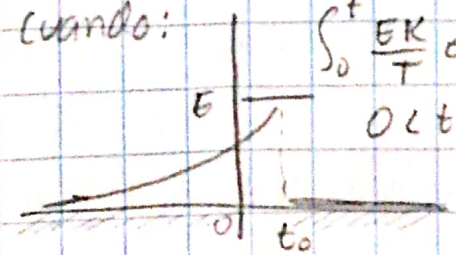


Cuando $t < 0$

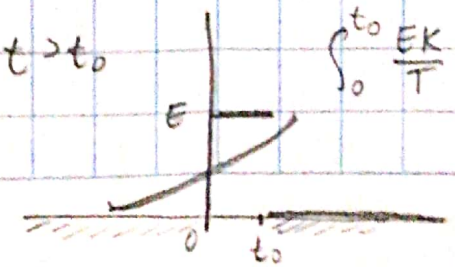


Cuando: $\int_0^t \frac{EK}{T} e^{-t/T} dt$

$0 < t < t_0$



$t > t_0$ $\int_0^{t_0} \frac{EK}{T} e^{-t/T} d\tau$



1

$$x(t) = \begin{cases} 0 & , \ t<0 \\ \int_0^t \frac{EK}{T} e^{-\tau/T} d\tau & , \ 0<t<t_0 \\ \int_0^{t_0} \frac{EK}{T} e^{-\tau/T} d\tau & , \ t>t_0 \end{cases}$$

$$\int_0^t \frac{EK}{T} e^{-\tau/T} d\tau = -\frac{EK}{T}(T) e^{-\tau/T}\Big|_0^t = -EKe^{-t/T} + EK$$

$$\int_0^{t_0} \frac{EK}{T} e^{-\tau/T} d\tau = -\frac{EK}{T}(T) e^{-\tau/T}\Big|_0^{t_0} = -EKe^{\frac{-t_0}{T}} + EK$$

$$x(t) = \begin{cases} 0 & , \ t<0 \\ EK\left[1-e^{-t/T}\right] & , \ 0<t<t_0 \\ EK\left(1-e^{-t_0/T}\right) & , \ t>t_0 \end{cases}$$

SE REQUIERE $x(5)$!!