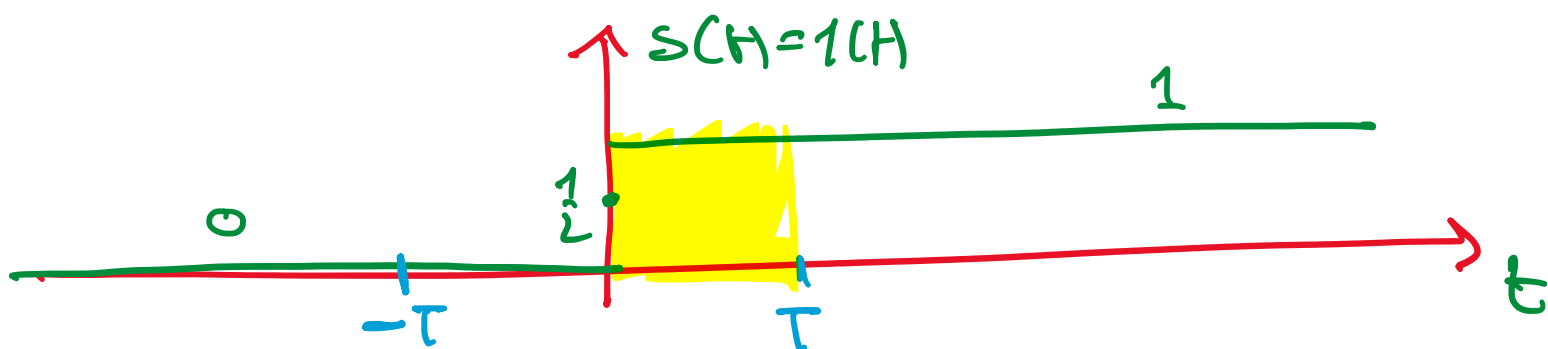


ES 1 SI CALCOLINO AREA E VALOR MEDIO DI

$$s(t) = 1(t)$$

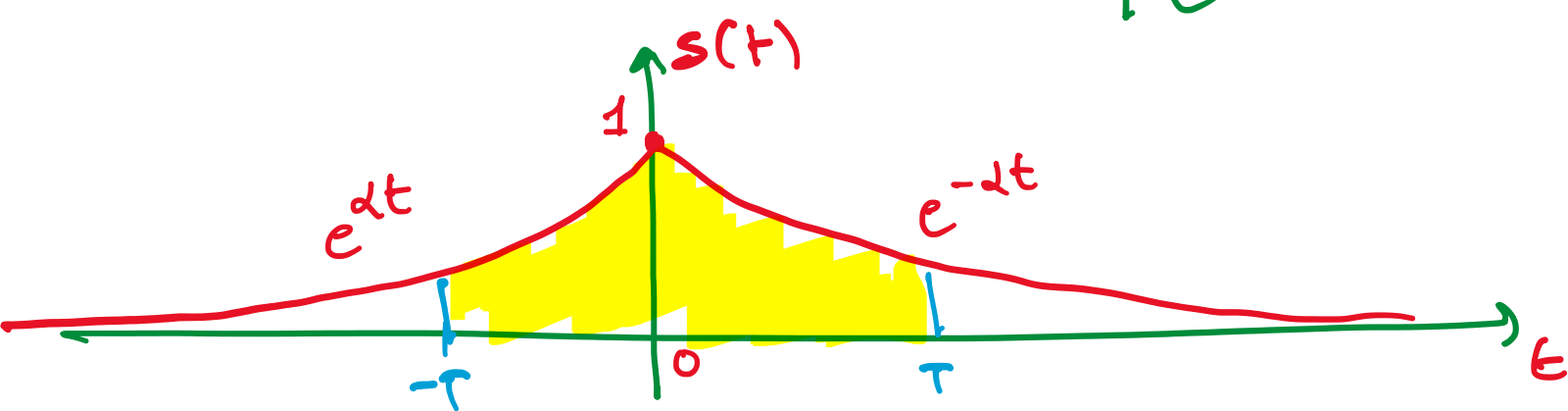


$$\text{Area}(s) = \lim_{T \rightarrow \infty} \int_{-T}^T s(t) dt = \lim_{T \rightarrow \infty} \int_0^T 1 dt = \lim_{T \rightarrow \infty} T = +\infty$$

$$m_s = \lim_{T \rightarrow \infty} \frac{1}{2T} \int_{-T}^T s(t) dt = \frac{1}{2}$$

ES 2 AREA E VALOR MEDIO DI $s(t) = e^{-\alpha|t|}$, $\alpha > 0$

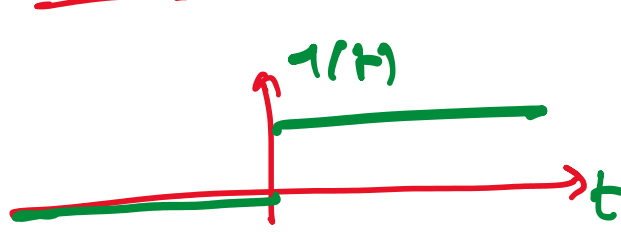
$$s(t) = \begin{cases} e^{-\alpha t} & t > 0 \\ e^{\alpha t} & t < 0 \end{cases}$$



$$A_s = \lim_{T \rightarrow \infty} 2 \int_0^T e^{-\alpha t} dt = \lim_{T \rightarrow \infty} 2 \left[\frac{e^{-\alpha t}}{-\alpha} \right]_0^T = \lim_{T \rightarrow \infty} \frac{2}{\alpha} (1 - e^{-\alpha T}) = \frac{2}{\alpha}$$

$$m_s = \lim_{T \rightarrow \infty} \frac{1}{2T} \int_{-T}^T s(t) dt = \frac{1}{\alpha} (1 - e^{-\alpha T}) = 0$$

ES 3 ENERGIA E POTENZA DI $s(t) = 1(t)$



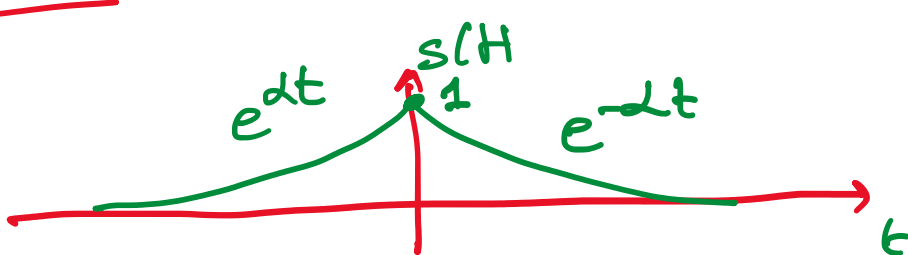
$$s(t) = 1(t) = \begin{cases} 1 & t > 0 \\ 0 & t < 0 \end{cases}$$

$$|s(t)|^2 = \begin{cases} 1 & t > 0 \\ 0 & t < 0 \end{cases} = 1(t)$$

$$E_s = \infty$$

$$P_s = 1/2$$

ES 4 ENERGIA E POTENZA DI $s(t) = e^{-\alpha|t|}$, $\alpha > 0$



$$s(t) = \begin{cases} e^{-\alpha t} & t > 0 \\ e^{\alpha t} & t < 0 \end{cases}$$

$$|s(t)|^2 = \begin{cases} e^{-2\alpha t} & t > 0 \\ e^{2\alpha t} & t < 0 \end{cases} = e^{-\beta|t|} \quad \beta = 2\alpha$$

$$A_s = \frac{2}{\alpha}$$

$$m_s = 0$$

$$E_s = \frac{2}{\beta} = \frac{1}{\alpha}$$

$$P_s = 0$$