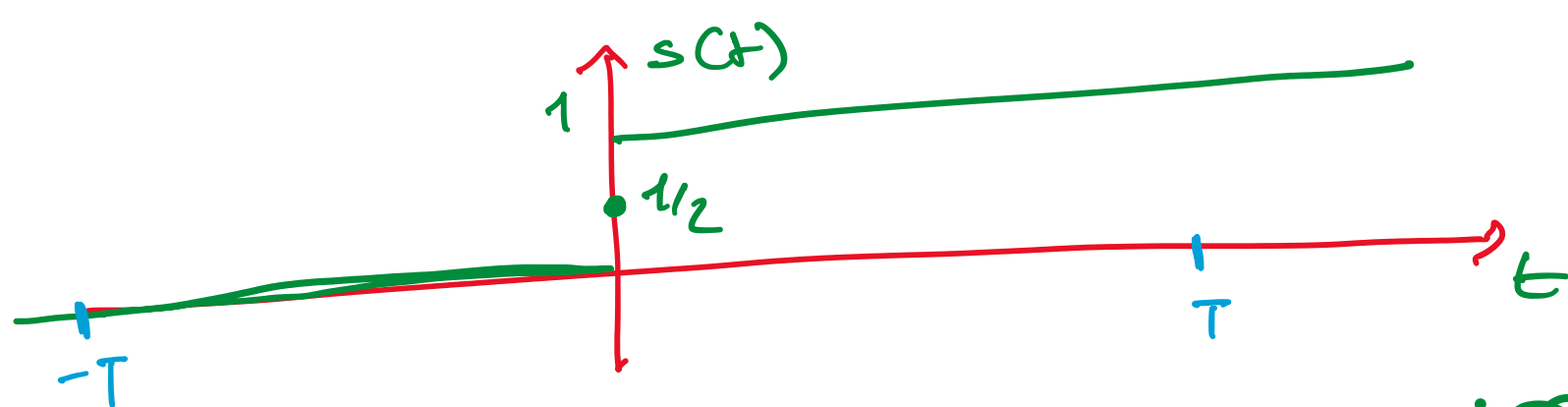


Es1

TROVARE AREA, VALORE MEDIO, ENERGIA E POTENZA

D1  $s(t) = 1(t)$



$$A_s = \int_{-\infty}^{+\infty} s(t) dt = \int_{-\infty}^{+\infty} 1(t) dt = t \Big|_0^{+\infty} = \infty - 0 = \infty$$

$$m_s = \lim_{T \rightarrow \infty} \frac{1}{2T} \int_{-T}^T 1(t) dt = \lim_{T \rightarrow \infty} \left[ \frac{t}{2T} \right]_0^T = \lim_{T \rightarrow \infty} \frac{T-0}{2T} = \frac{1}{2}$$

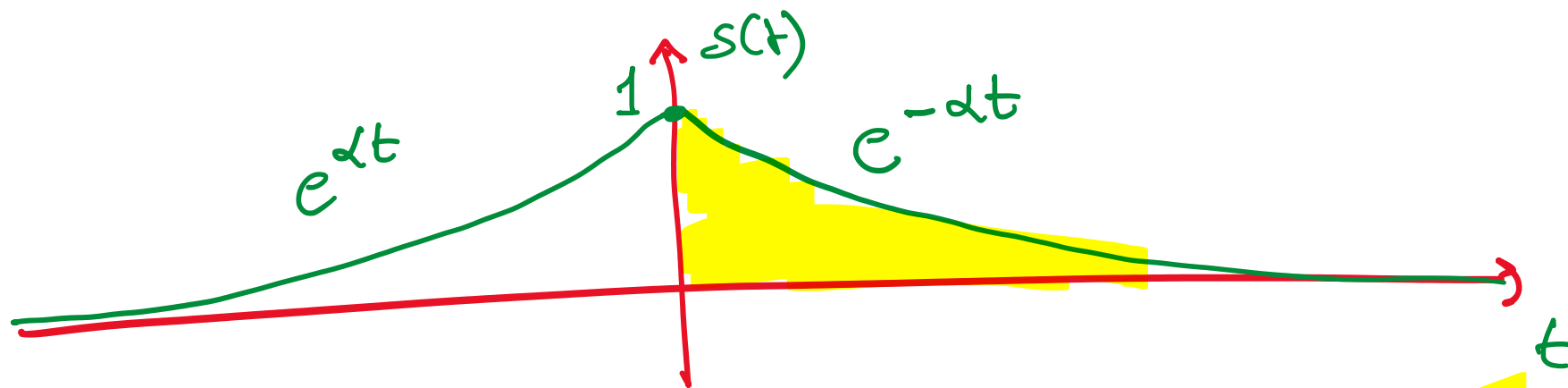
$$|s(t)|^2 = \begin{cases} 1 & t > 0 \\ 0 & t < 0 \end{cases}$$

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

$$|s(t)|^2 = 1(t)$$

$$E_s = \infty$$

$$P_s = 1/2$$

Es2  $A_s, m_s, E_s, P_s$  con  $s(t) = e^{-\alpha|t|}$   $\alpha > 0$ 

$$A_s = \int_{-\infty}^{+\infty} s(t) dt = 2 \int_0^{+\infty} e^{-\alpha t} dt = 2 \left[ \frac{e^{-\alpha t}}{-\alpha} \right]_0^{+\infty} = \frac{2}{-\alpha} (0 - 1) = \frac{2}{\alpha}$$

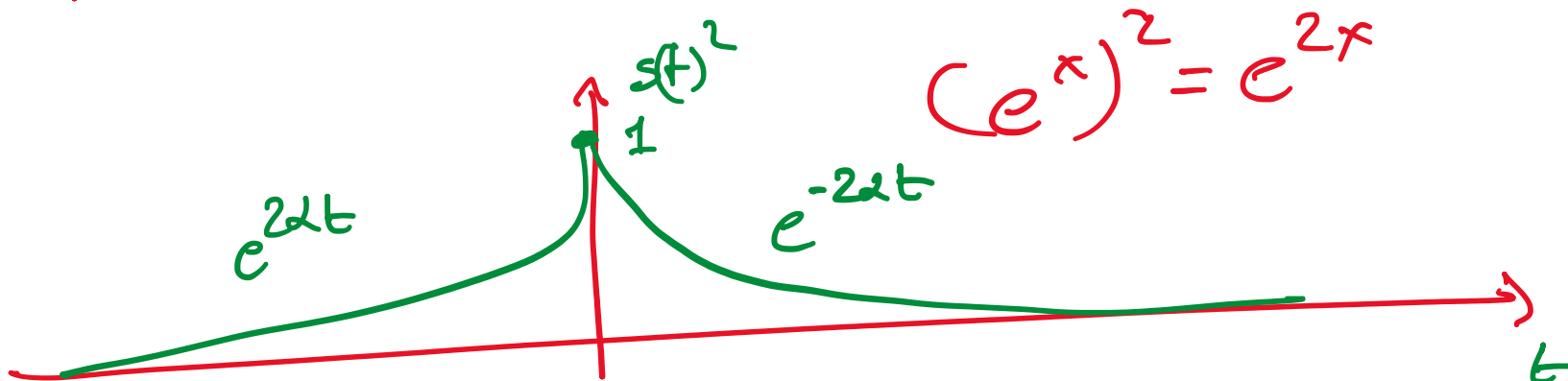
$$\int_{-\infty}^0 e^{\alpha t} dt + \int_0^{+\infty} e^{-\alpha t} dt$$

$$m_s = 0$$

$$|s(t)|^2 = s^2(t) = e^{-2\alpha|t|}$$

$$s(t) = e^{-\alpha|t|}$$

$$(e^x)^2 = e^{2x}$$



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

$$m_s = 0$$

$$s(t) = e^{-\alpha|t|}$$

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

$$P_s = 0$$

$$|s(t)|^2 = e^{-2\alpha|t|}$$