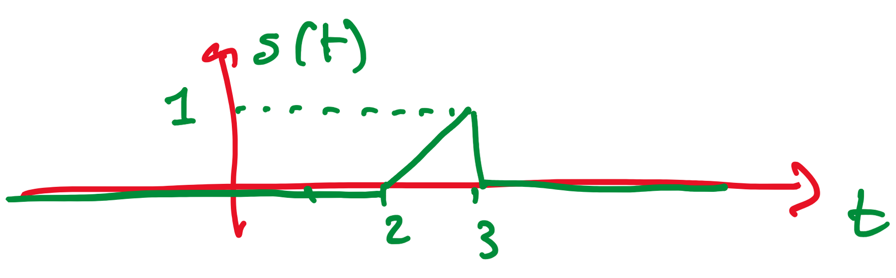
Le4

Thursday, 29 February 2024 23:23

Es 5



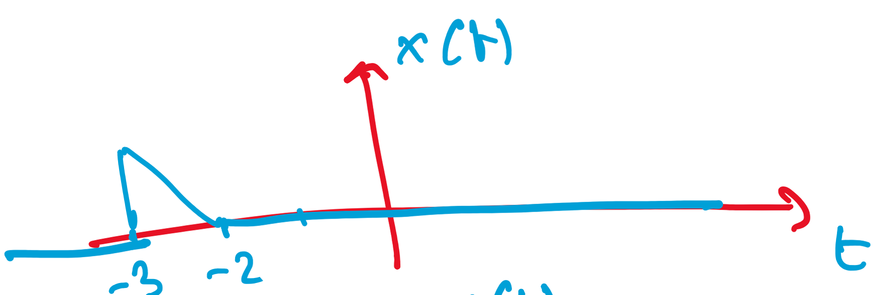
DISEGNARE $y(t) = s(-t+2)$

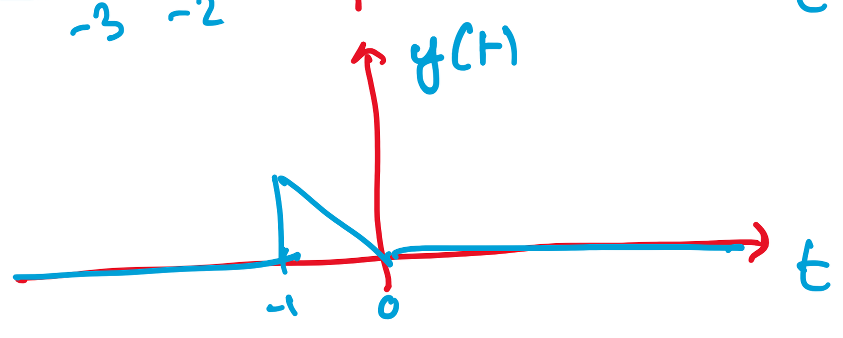
$s(t) \rightarrow \boxed{\text{RIBAL.}} \xrightarrow{x(t)=s(-t)} \boxed{\begin{matrix}\text{traslaz.}\\ t_0=2\end{matrix}} \xrightarrow{y(t)=x(t-t_0)}$

$y(t) = s[-(t-t_0))$

$= s(-t+t_0)$

$t_0 = 2$

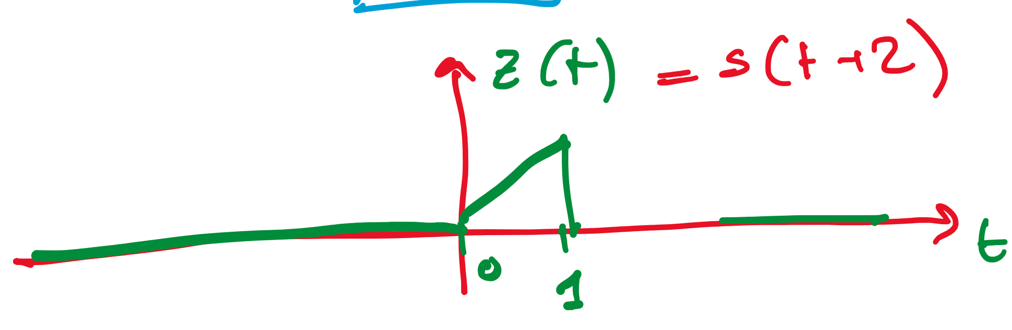


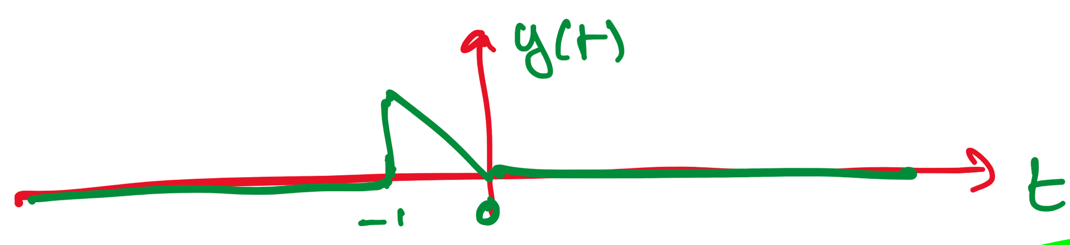


$y(u) = z(-u)$

$s(t) \rightarrow \boxed{\begin{matrix}\text{trasl.}\\ t_1=-2\end{matrix}} \xrightarrow{z(t)=s(t-t_1)} \boxed{\text{RIB.}} \xrightarrow{y(t)=z(-t)}$

$= s(-t-t_1)$





$s(t-t_0)$ $t_0 > 0$

$\longrightarrow$ a destra di t_0

$s(t+t_0)$ $t_0 > 0$

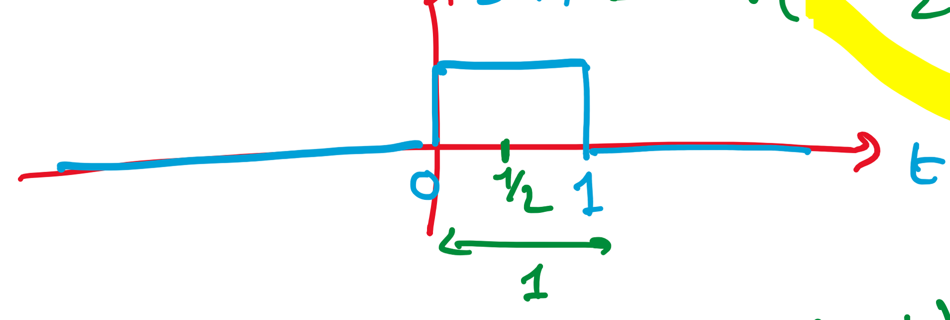
$\longleftarrow$ a sinistra di t_0

$s(t-t_0)$ $t_0 < 0$

$\longleftarrow$ a sinistra di $|t_0|$

ES TROVARE PARTE PARI E DISPARI DI

$s(t) = \text{rect}\left(t - \frac{1}{2}\right)$

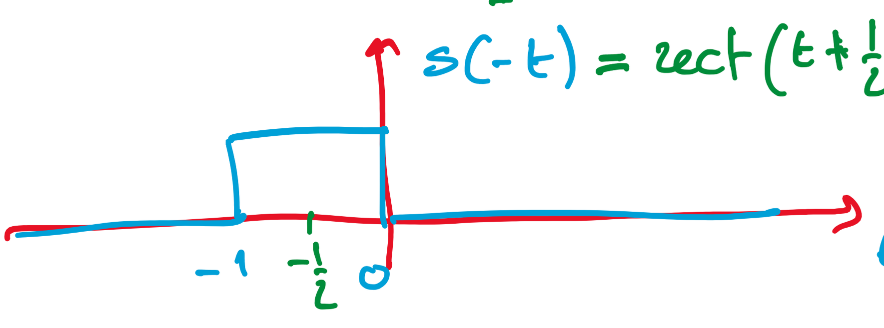


$s(-t) = \text{rect}\left(t + \frac{1}{2}\right) = \text{rect}\left(-t - \frac{1}{2}\right)$

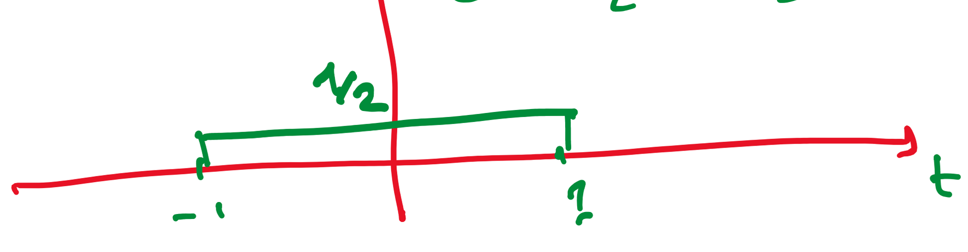
$= \text{rect}\left(-\left(t+\frac{1}{2}\right)\right)$

$= \text{rect}(t + 1/2)$

PARI



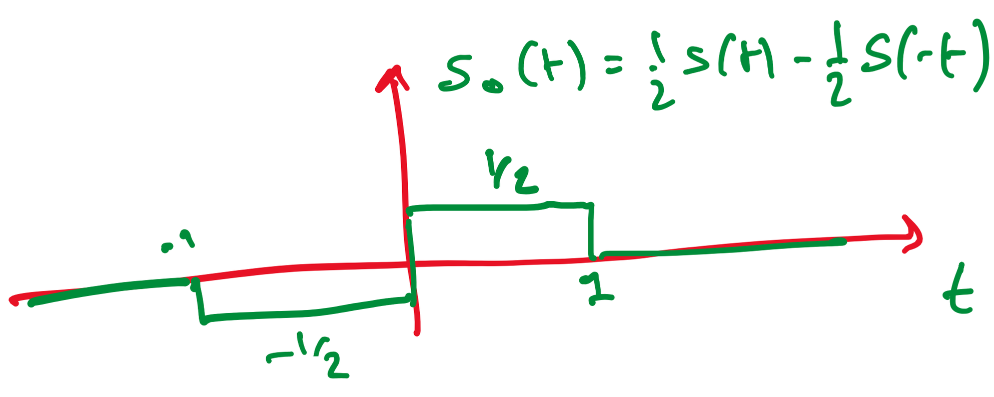
$s_e(t) = \frac{1}{2} s(t) + \frac{1}{2} s(-t)$



$s_e(t) = \frac{1}{2}\text{rect}\left(t-\frac{1}{2}\right) + \frac{1}{2}\text{rect}\left(t+\frac{1}{2}\right)$

$= \frac{1}{2}\text{rect}\left(\frac{t}{2}\right)$

$s_o(t) = \frac{1}{2} s(t) - \frac{1}{2} s(-t)$



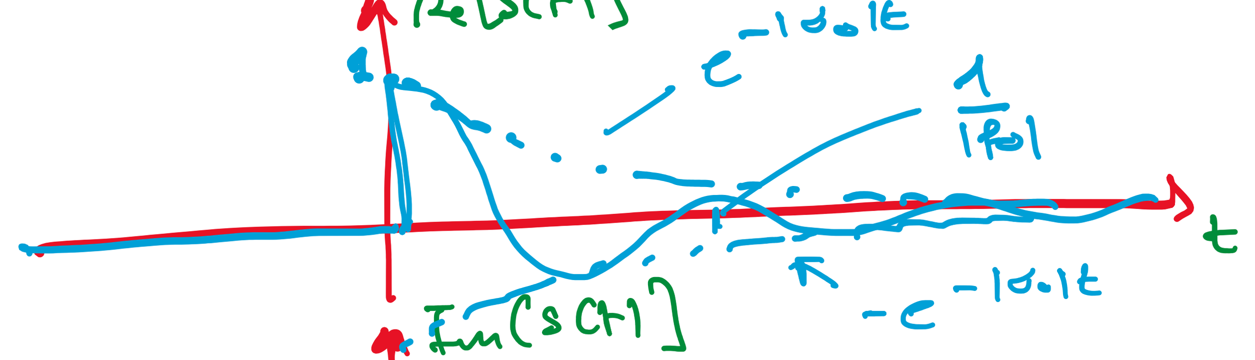
$s_o(t) = \frac{1}{2}\text{sign}(t)\,\text{rect}\left(\frac{t}{2}\right)$

ES TROVARE A_s, m_s, E_s, P_s PER $s(t) = e^{(\sigma_0 + j\omega_0)t}\, 1(t)$ $\sigma_0 < 0$

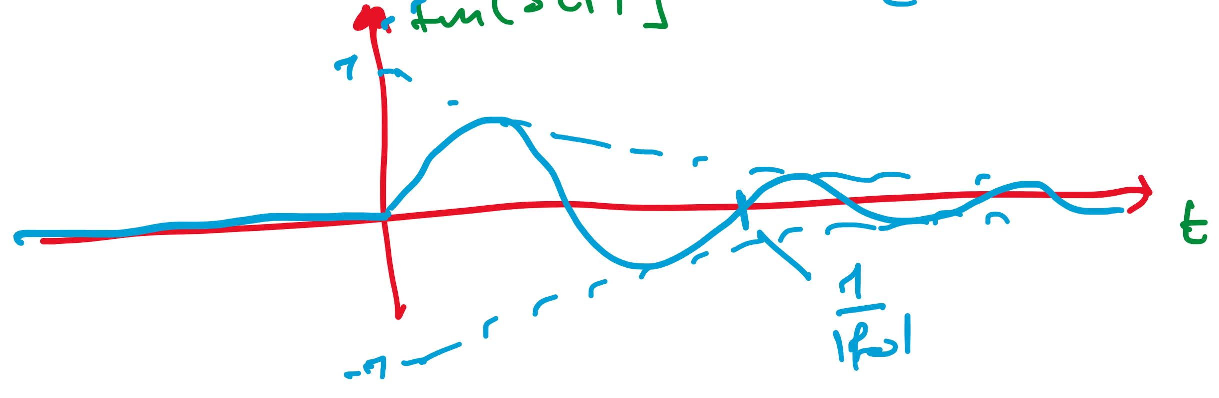
$$s(t) = e^{\sigma_0 t} \cdot e^{j\omega_0 t}\, 1(t)$$

$$= e^{-|\sigma_0|t}\left(\cos\omega_0 t + j\sin\omega_0 t\right) 1(t)$$

$$= \underbrace{e^{-|\sigma_0|t}\cos(\omega_0 t)\, 1(t)}_{Re} + \underbrace{j\, e^{-|\sigma_0|t}\sin(\omega_0 t)\, 1(t)}_{Im}$$



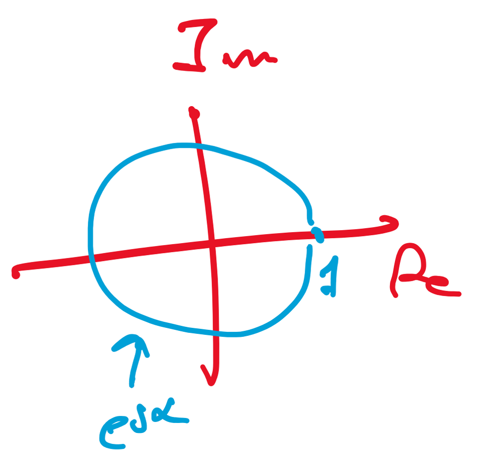
$\omega_0 = 2\pi f_0$



$$A_s = \int_{\cancel{-\infty}\ 0}^{+\infty} e^{(\sigma_0 + j\omega_0)t}\, \cancel{1(t)}\, dt = \left.\frac{e^{(\sigma_0+j\omega_0)t}}{\sigma_0 + j\omega_0}\right]_0^{+\infty} = \frac{0-1}{\sigma_0 + j\omega_0}$$

$$= \frac{-1}{\sigma_0 + j\omega_0}$$

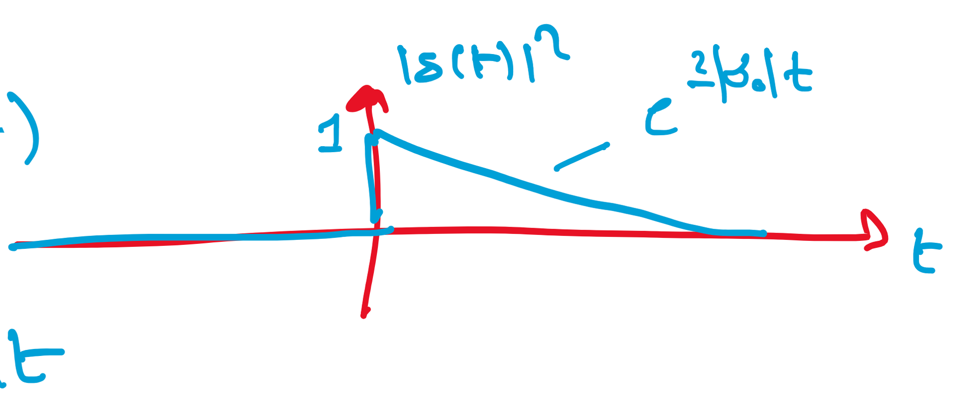
$m_s = 0$



$$|s(t)|^2 = \left|e^{\sigma_0 t}\, e^{j\omega_0 t}\, 1(t)\right|^2$$

$$= \underbrace{|e^{\sigma_0 t}|^2}_{e^{2\sigma_0 t}} \cdot \underbrace{|e^{j\omega_0 t}|^2}_{1} \cdot \underbrace{|1(t)|^2}_{1(t)}$$

$$= e^{-2|\sigma_0|t} \cdot 1(t)$$



$$E_s = \int_{\cancel{-\infty}\ 0}^{+\infty} e^{-2|\sigma_0|t}\, \cancel{1(t)}\, dt$$

$$= \left.\frac{e^{-2|\sigma_0|t}}{-2|\sigma_0|}\right]_0^{+\infty} = \frac{0-1}{-2|\sigma_0|} = \frac{1}{2|\sigma_0|} > 0$$

$P_s = 0$