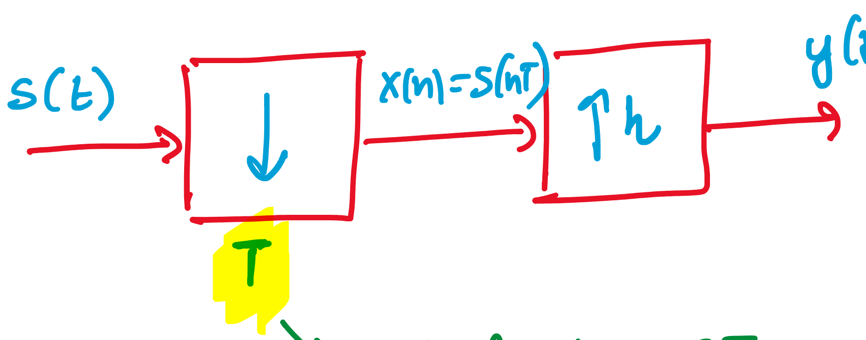
Le24

Thursday, 16 May 2024 09:38

Es 1

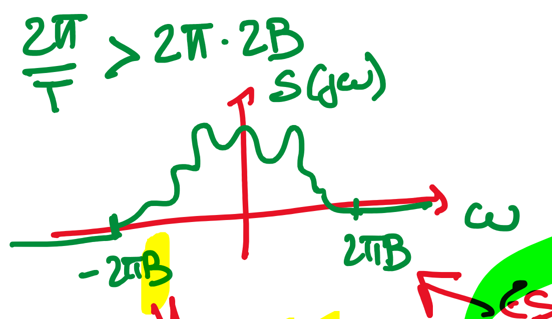
PROPORRE UNO SCHEMA CAMP/RICOSTRUZIONE X IL SEGNALE $s(t) = \text{sinc}^3(t)$



$$y(t)=\sum_{n=-\infty}^{+\infty} x(n)\, h(t-nT)$$

$$h(t)=\text{sinc}\left(\tfrac{t}{T}\right)$$

→ T tale che $\frac{2\pi}{T} > 2\pi \cdot 2B$



$$T < \frac{1}{2B}$$

ESTENSIONE TRASF DI FOURIER

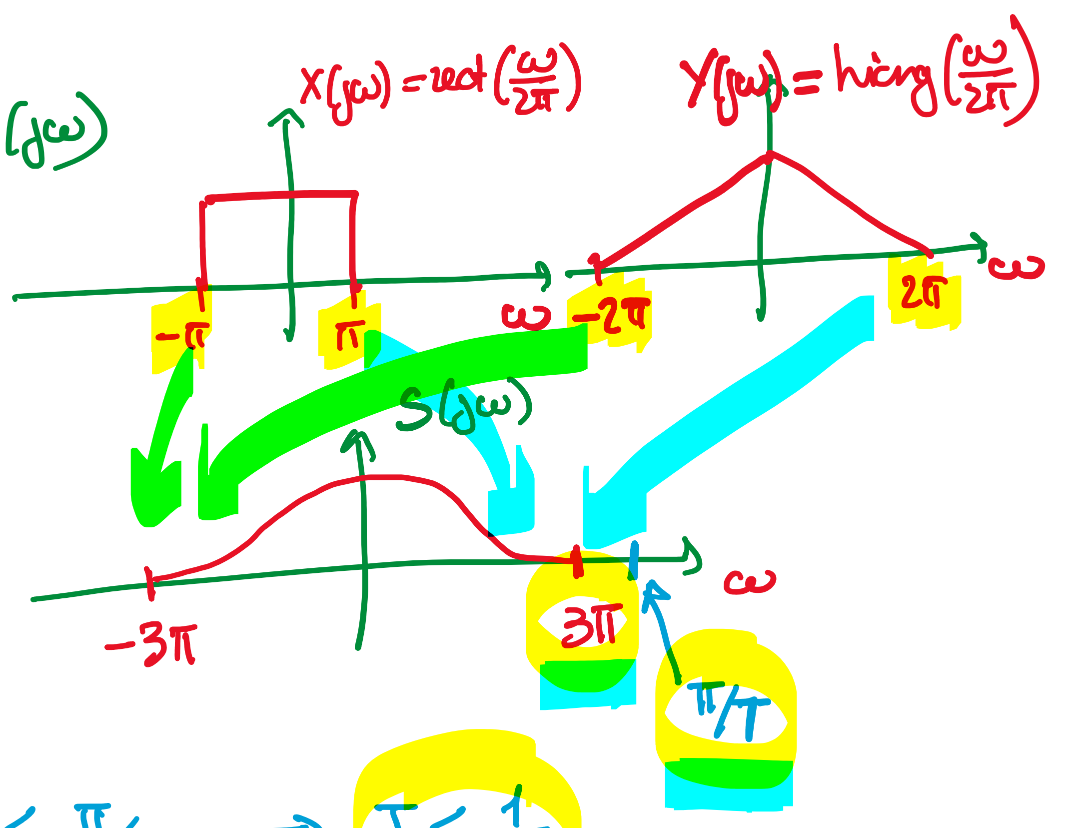
UNA RICOSTRUZIONE CORRETTA ASSICURA $y(t)=s(t)$

$$\text{sinc}^3(t) = \sum_{n=-\infty}^{+\infty} \text{sinc}^3(nT)\, \text{sinc}\left(\frac{t-nT}{T}\right)$$

FORMULA DI RICOSTRUZIONE

$$s(t) = \text{sinc}^3(t) = \underbrace{\text{sinc}(t)}_{x(t)} \cdot \underbrace{\text{sinc}^2(t)}_{y(t)}$$

$$S(j\omega) = \frac{1}{2\pi} X * Y(j\omega)$$



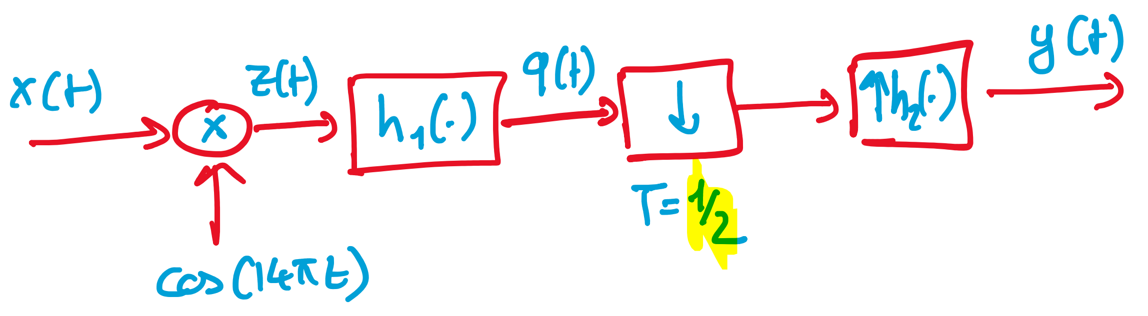
$$3\pi \le \pi/T \longrightarrow T \le \frac{1}{3}$$

$$3\pi = 2\pi \cdot B \rightarrow B = \frac{3\pi}{2\pi} = 3/2 \rightarrow T \le \frac{1}{2B} = \frac{1}{2\cdot\frac{3}{2}} = \frac{1}{3}$$

$$\boxed{T = 1/3}$$

X CASA PROVATE CON sinc^4 E sinc^5

ES3



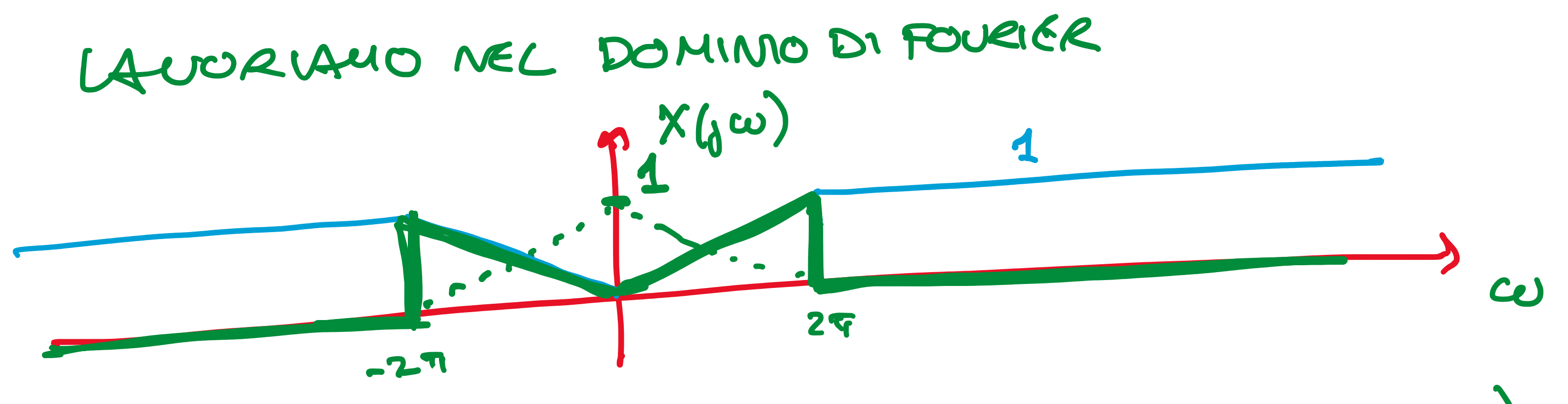
$$X(j\omega) = \text{rect}\left(\frac{\omega}{4\pi}\right)\left(1 - \text{triang}\left(\frac{\omega}{2\pi}\right)\right)$$

$$H_1(j\omega) = 2 - 2\,\text{rect}\left(\frac{\omega}{28\pi}\right)$$

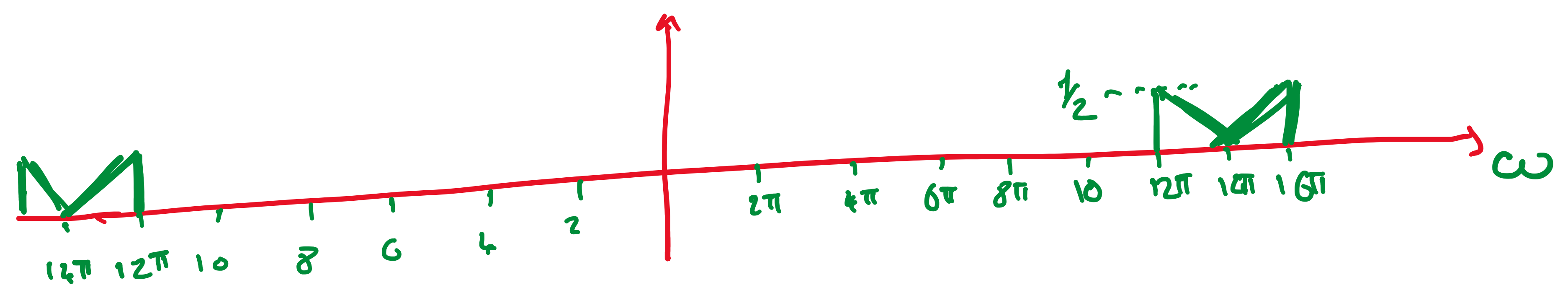
$$H_2(j\omega) = \frac{1}{2}\,\text{rect}\left(\frac{\omega}{4\pi}\right)$$

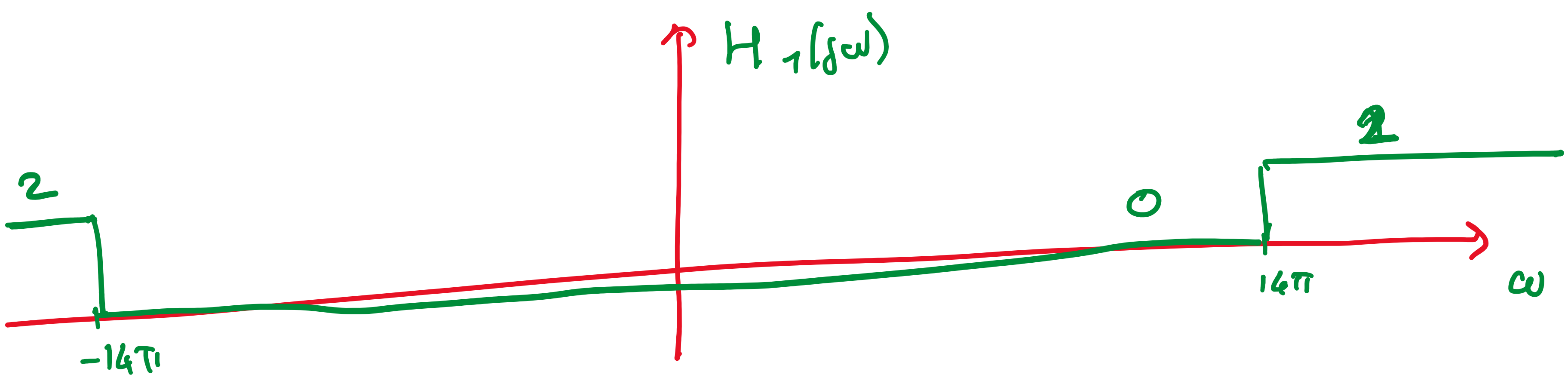
$y(t) = ?$

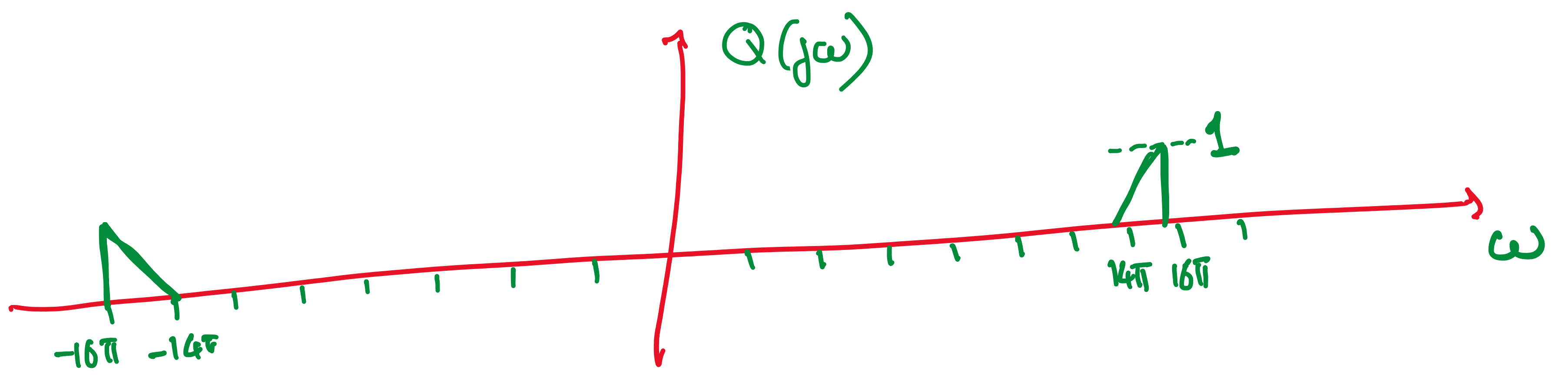
LAVORIAMO NEL DOMINIO DI FOURIER

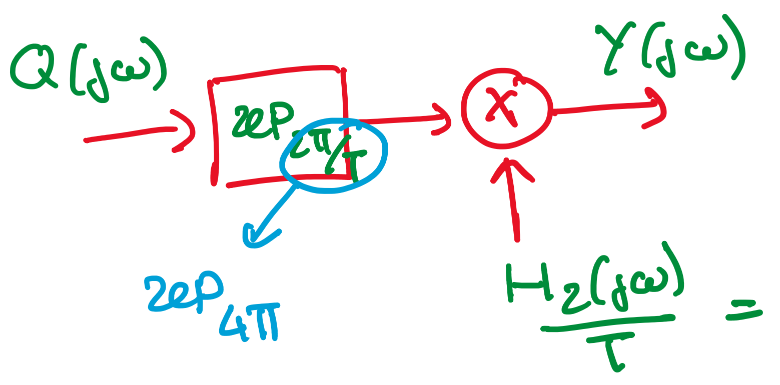


$$Z(j\omega) = \frac{1}{2} X(j(\omega-\omega_0)) + \frac{1}{2} X(j(\omega+\omega_0)) \qquad \omega_0 = 14\pi$$









$$\frac{H_2(j\omega)}{T} = 2 H_2(j\omega) \qquad T = 1/2$$