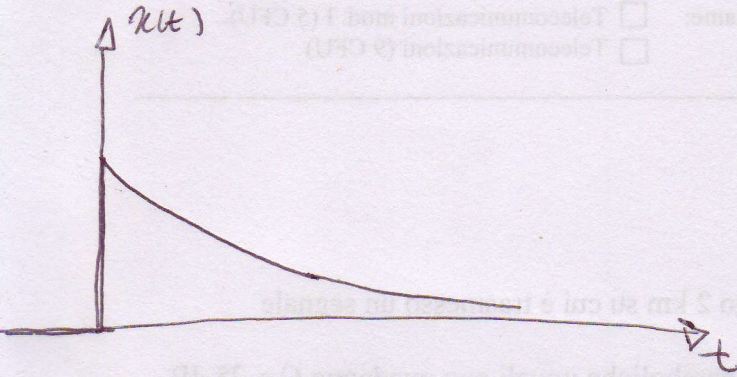


Esercizio 2

Si calcoli la convoluzione trasformata di Fourier del seguente segnale.

$$x(t) = \begin{cases} e^{-3t} & t \geq 0 \\ 0 & \text{altrove} \end{cases}$$

= SOLUZIONE =



$$X(f) = \int_{-\infty}^{\infty} x(t) e^{-j2\pi f t} dt$$

$$= \int_0^{\infty} e^{-3t} e^{-j2\pi f t} dt = \int_0^{\infty} e^{-(j2\pi f + 3)t} dt$$

$$= \left[-\frac{1}{j2\pi f + 3} e^{(j2\pi f + 3)t} \right]_0^{\infty} = \frac{1}{j2\pi f + 3}$$