

Delta di Dirac

$$\delta(x) = 0, \quad x \neq 0$$

$$\int dx \delta(x) = 1$$

p.es $\delta_K(x) = \frac{\sin(Kx)}{\pi x} = \frac{1}{2\pi} \int_{-K}^{+K} dK e^{iKx}$

$$\lim_{x \rightarrow \pm\infty} \delta_K(x) = 0, \quad \int_{-\infty}^{+\infty} dx \delta_K(x) = \frac{1}{\pi} \int_{-\infty}^{+\infty} d\xi \frac{\sin \xi}{\xi} = 1$$

$$\Rightarrow \lim_{K \rightarrow \pm\infty} \delta_K(x) = \delta(x),$$

$$\delta(x) = \frac{1}{2\pi} \int_{-\infty}^{+\infty} dk e^{ikx}$$

