

# Dirac Delta Function

沈威宇

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# 1 Dirac Delta Function

Dirac  $\delta$  function:  $\delta(x)$

$$\delta(x) = \begin{cases} \infty, & x = 0, \\ 0, & x \neq 0. \end{cases}$$

$$\forall \epsilon > 0 : \int_{a-\epsilon}^{a+\epsilon} f(x) \delta(x-a) dx = f(a).$$

$$\int_{0-}^{0+} \delta(x) dx = \frac{1}{2}.$$

$$\int_{-\infty}^{\infty} \delta(x) dx = 1.$$