

• $\int_{-\infty}^{\infty} \delta(x) dx = 1$ (normalization condition)

• $\int_{-\infty}^{\infty} x^n \delta(x) dx = 0$ for $n > 0$ (odd moments are zero)

• $\int_{-\infty}^{\infty} x^n \delta(x-a) dx = a^n$ (generalized delta function)

• $\int_{-\infty}^{\infty} f(x) \delta(x-a) dx = f(a)$ (sifting property)

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