

$$X \sim N(0,1), f(x) = \frac{1}{\sqrt{2\pi}} e^{-\frac{x^2}{2}},$$

$$\begin{aligned} E(|X|) &= \int_{-\infty}^{+\infty} |x| \cdot \frac{1}{\sqrt{2\pi}} e^{-\frac{x^2}{2}} dx = 2 \cdot \int_0^{+\infty} x \cdot \frac{1}{\sqrt{2\pi}} e^{-\frac{x^2}{2}} dx = 2 \cdot \int_0^{+\infty} \frac{1}{\sqrt{2\pi}} e^{-\frac{x^2}{2}} d\left(\frac{x^2}{2}\right) \\ &= -2 \cdot \frac{1}{\sqrt{2\pi}} e^{-\frac{x^2}{2}} \Big|_0^{+\infty} = \sqrt{\frac{2}{\pi}} \end{aligned}$$

$$E(|X|^2) = E(X^2) = D(X) + (E(X))^2 = 1 + 0^2 = 1$$

$$D(|X|) = E(|X|^2) - E(|X|)^2 = 1 - \frac{2}{\pi}$$