some continuous random variables and their pdfs

normal distribution $X \sim N(\mu, \sigma^2)$

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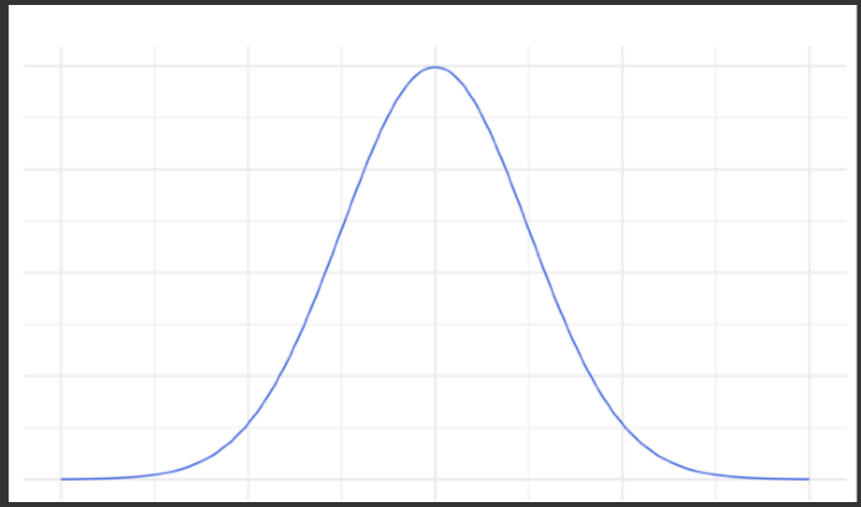
A continuous random variable X has normal distribution with parameters μ and σ^2 if it has the following pdf:

$$f(x) = \frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$



If continuous random variable $X \sim N(\mu, \sigma^2)$ then random variable Z defined as

$$Z = \frac{X - \mu}{\sigma}$$

has standard normal distribution $Z \sim N(0,1)$

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standard normal distribution $Z \sim N(0,1)$