Gaussian Densities

1 Why

We want a density that is symmetric about some central value with some spread.

2 Definition

Let R denote the set of real numbers. Let $\mu \in R$, let $\sigma \in R$ with $\sigma > 0$.

Then $f : R \to R$ is a **gaussian density** if

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