Multivariate Gaussians

1 Why

We generalize the Gaussian to n-dimensional space.

2 Definition

$f : \mathbf{R}^d \to \mathbf{R}$ is a **gaussian density** if there exists $\Sigma \succ 0$ and μ such that

$$f(x) = \frac{1}{(2\pi)^d \det \Sigma} \exp(-\frac{1}{2}(x-\mu)^T \Sigma^{-1}(x-\mu)$$