Two Gaussians

$$P(X_1) \sim \mathcal{N}(\mu_1, \sigma_1^2) \qquad P(X_2) \sim \mathcal{N}(\mu_2, \sigma_2^2)$$

$$\mathcal{N}(x|\mu, \sigma^2) = \frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{(x-\mu)^2}{2\sigma^2}} = \text{const} \cdot e^{-\text{parabola}}$$