Normal pdf. For $X \sim \mathrm{N}_k(\mu, \Sigma)$,

$$f(x \mid \mu, \Sigma) = \frac{1}{(2\pi)^{k/2}|\Sigma|^{1/2}} \exp\left\{-\frac{1}{2}(x-\mu)^T\Sigma^{-1}(x-\mu)\right\}$$

Poisson pdf. For $X \sim \mathrm{P}(\lambda)$,

$$f(x \mid \lambda) = \frac{e^{-\lambda}\lambda^x}{x!} I(x \in \{0, 1, \ldots\})$$

Identifiability. A family $\mathcal{F} = \{F(x;\theta) : \theta \in \Theta\}$ is identifiable if

$$F(x;\theta) \stackrel{as}{=} F(x;\theta^*) \quad \Longrightarrow \quad \theta = \theta^*$$

Characteristic function. Let $i = \sqrt{-1}$, then

$$\phi_X(t) = \int e^{itx} dF(x)$$

is the chf of $X \sim F$