

$$f(x) = \begin{cases} \lambda e^{-\lambda x} : x \geq 0 \\ 0 : x < 0 \end{cases}$$

$$I \sim \text{Exp}(\zeta)$$

$$\begin{aligned} P(X < 1) &= \int_0^1 \zeta e^{-\zeta x} dx = -e^{-\zeta x} \Big|_0^1 = \\ &= -e^{-\zeta} + e^0 = 1 - e^{-\zeta} = \end{aligned}$$