

$$X \sim \mathcal{E}(3)$$

$$f_x : x \rightarrow \begin{cases} 3e^{-3x} & \text{si } x \geq 0 \\ 0 & \text{sinon.} \end{cases}$$

$$\begin{aligned} P(X \leq 4) &= \int_{-\infty}^4 f_x(x) dx \\ &= \int_{-\infty}^0 0 dx + \int_0^4 3e^{-3x} dx \\ &= \left[-e^{-3x} \right]_0^4 = 1 - e^{-12} \end{aligned}$$

$$P(X \leq 4) = F_x(4) = 1 - e^{-12} \quad \text{Mm.}$$

$$P(2 \leq X \leq 7) = F_x(7) - F_x(2) = \begin{cases} 1 - e^{-21} & \text{si } x \geq 0 \\ 0 & \text{sinon.} \end{cases} - (1 - e^{-6}) = e^{-6} - e^{-21}$$