

(a)

$X \sim \text{Exponential } (\lambda = 1).$

$$P(X \leq x) = 1 - e^{-x}$$

$$P(X \leq \frac{1}{\lambda}) = P(X \leq 1) = 1 - e^{-1}$$

(b)

$X \sim \text{Exponential } (\lambda = 2)$

$$P(X \leq x) = 1 - e^{-2x}$$

$$P(X \leq \frac{1}{\lambda}) = P(X \leq \frac{1}{2}) = 1 - e^{-1}$$

(c)

$X \sim \text{Exponential } (\lambda)$

$$P(X \leq x) = 1 - e^{-\lambda x}$$

$$P(X \leq \frac{1}{\lambda}) = 1 - e^{-1}.$$