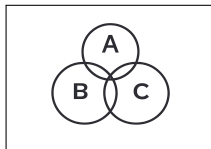


21

Discrete Distribution Poisson Variable

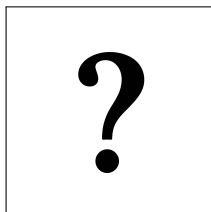


$$\lambda = 1$$



$$P(X = k) = e^{-\lambda} \frac{\lambda^k}{k!}$$

$$P(X = 0) = e^{-1} \frac{1^0}{0!} = e^{-1} \approx \boxed{0.37}$$

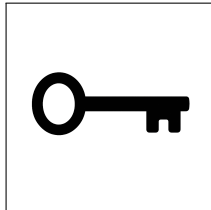


$$P(X = 1 | X \leq 1) = 0.8$$

$$\lambda = ?$$

21

Discrete Distribution Poisson Variable



$$P(X = 1 | X \leq 1) = 0.8$$

$$\lambda = ?$$

$$P(X = 1 | X \leq 1) = \frac{P(X=1)}{P(X=0)+P(X=1)}$$

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

$$P(X = 1 | X \leq 1) = \frac{\lambda}{1+\lambda} = 0.8$$

$$\frac{\lambda}{1+\lambda} = 0.8$$

$$\lambda = 0.8(1 + \lambda)$$

$$\lambda - 0.8\lambda = 0.8$$

$$0.2\lambda = 0.8$$

$$\lambda = \boxed{4}$$