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Discrete Distribution Geometric Variable

K

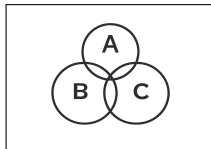


$$p = 0.25$$

$$X = \{1, 2, 3, \dots\}$$

$$PMF = ?$$

$$E[X] = ?$$



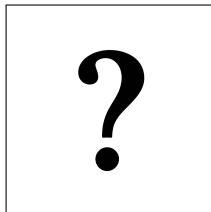
$$P(X = x) = (1 - p)^{x-1}p$$

$$P(X = 1) = 0.25$$

$$P(X = 2) = 0.75(0.25) = 0.1875$$

$$P(X = 3) = 0.75^2(0.25) = 0.1406$$

$$E[X] = 1/p = 1/0.25 = \boxed{4}$$



$$p = 0.75$$

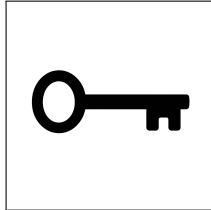
$$X = \{1, 2, 3, \dots\}$$

$$P(X \leq 3) = ?$$

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$$p = 0.75$$

$$X = \{1, 2, 3, \dots\}$$

$$P(X \leq 3) = ?$$

$$P(X \leq 3) = 1 - P(X > 3)$$

$$P(X \leq 3) = 1 - (1 - p)^3$$

$$P(X \leq 3) = 1 - (0.25)^3$$

$$P(X \leq 3) = 1 - 0.015625$$

$$P(X \leq 3) = 0.984375$$