

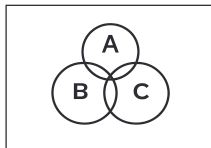
G

Geometric Random Variable

G

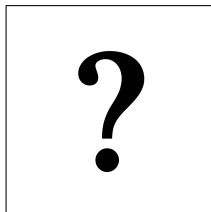


$$p = 0.25$$
$$X = \{1, 2, 3, \dots\}$$
$$PMF = ?$$
$$E[X] = ?$$



$$P(X = x) = (1 - p)^{x-1}p$$
$$P(X = 1) = 0.25$$
$$P(X = 2) = 0.75(0.25) = 0.1875$$
$$P(X = 3) = 0.75^2(0.25) = 0.1406$$

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

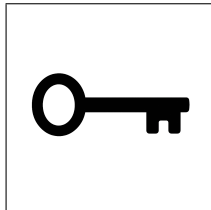


$$E[X] = 12.5$$
$$p = ?$$
$$P(X = k) = ?$$

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$$E[X] = 12.5$$

$$p = \frac{1}{E[X]} = \boxed{0.08}$$

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

$$P(X = 6) = (1 - 0.08)^5 (0.08) = (0.92)^5 \times 0.08 \approx 0.6591 \times 0.08 \approx \boxed{0.0527}$$