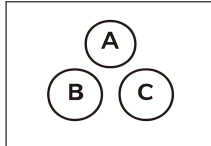


23

Discrete Distribution Negative Binomial

0



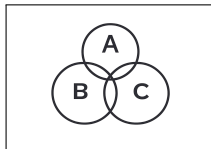
$$p = 0.5$$

$$r = 2$$

$$n = 3$$

$$P(X = n) = \binom{n-1}{r-1} p^r (1-p)^{n-r}$$

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

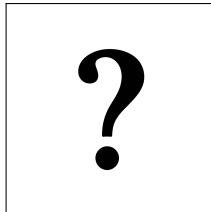


$$P(X = 3) = \binom{3-1}{2-1} (0.5)^2 (0.5)^{3-2}$$

$$P(X = 3) = \binom{2}{1} (0.5)^3$$

$$P(X = 3) = 2 \times 0.125$$

$$P(X = 3) = \boxed{0.25}$$



$$p = 0.20$$

$$r = 3$$

$$E[X] = ?$$

$$Var(X) = ?$$

23

Discrete Distribution
Negative Binomial

O



$$p = 0.20$$

$$r = 3$$

$$E[X] = ?$$

$$Var(X) = ?$$

$$E[X] = \frac{r}{p}$$

$$E[X] = \frac{3}{0.2}$$

$$E[X] = 15$$

$$Var(X) = \frac{r(1-p)}{p^2}$$

$$Var(X) = \frac{3(1-0.2)}{0.2^2}$$

$$Var(X) = \frac{3 \cdot 0.8}{0.04}$$

$$Var(X) = \frac{2.4}{0.04}$$

$$Var(X) = 60$$