data • •

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(1)

$P(x=k) = \binom{N}{k} p^k (1-p)^{N-k}$ $\quad P(x=k) = 3003 \cdot 0,4^5 (1-0,4)^{10}$

$P(x=k) = 0.18$

$\binom{N}{k} = \binom{15}{5} = \frac{15!}{(15-5)!\,5!} = 3003$

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

$\lambda = \frac{300}{300} = 1$

$P(x=0) = \frac{e^{-1} 1^0}{0!} = 0.367$

$P(x=1) = \frac{e^{-1} 1^1}{1!} = 0.367$

$P(x=2) = \frac{e^{-1} 1^2}{2!} = 0.183$

$P(x \geq 3) = 1 - P(x=0) - P(x=1) - P(x=2)$

$= 1 - 0.367 - 0.367 - 0.183$

$= 0,083$

(3) 4 em 7 = Vencedor $\quad p = 0,55 \quad Y$ = A VENCE A SÉRIE

$P(Y) = P(x=4) + P(x=5) + P(x=6) + P(x=7) = 0.61$

$P(x=4) = \binom{3}{3} \cdot 0,55^3 \cdot (1-0,55)^{3-3} \cdot 0,55 = 0.091$

$P(x=5) = \binom{4}{3} 0,55^3 (1-0,55)^{4-3} 0,55 = 0.164$

$P(x=6) = \binom{5}{3} 0,55^3 (1-0,55)^{5-3} 0,55 = 0.135$

$P(x=7) = \binom{6}{3} 0,55^3 (1-0,55)^{6-3} 0,55 = 0.166$

(4) Média = 150.000 km

dp = 5.000 km

$P(140.000 \leq x \leq 165.000) = z_2 - z_1 = 0.9759$

$z_1 = \frac{140.000 - 150.000}{5.000} = -2 = 0.0228$

$z_2 = \frac{165 - 150.000}{5.000} = 3 = 0.9987$

data

(5)

(5) $\lambda = 1/10$

$$P(10 \le x \le 20) = \int_{10}^{20} \frac{1}{10} \exp\left(-\frac{x}{10}\right) = \boxed{0.23254}$$