

1. (1) 总体: 所在地区近三年计算机专业本科毕业生现在的月薪情况
(2) 样本: 抽取出来的 200 名近三年计算机专业本科毕业生现在的月薪情况
(3) 样本容量: 200

2. (1) 是 (2) 是 (3) 是 (4) 不是 (5) 不是 (6) 不是 (7) 是 (8) 不是

$$4. (1) P(X_1=x_1, X_2=x_2, \dots, X_n=x_n) = \frac{\lambda^{x_1}}{x_1!} e^{-\lambda} \cdot \frac{\lambda^{x_2}}{x_2!} e^{-\lambda} \cdot \dots \cdot \frac{\lambda^{x_n}}{x_n!} e^{-\lambda}$$

$$= \frac{\lambda^{\sum_{i=1}^n x_i} e^{-n\lambda}}{x_1! x_2! \dots x_n!}$$

$$(2) E(\bar{X}) = E(X) = \lambda, D(\bar{X}) = \frac{D(X)}{n} = \frac{\lambda}{n}, E(S^2) = D(X) = \lambda$$

$$5. (1) P(\max\{X_1, X_2, X_3\} < 5) = P(X_1 < 5) \cdot P(X_2 < 5) \cdot P(X_3 < 5)$$

$$P(X < 5) = \Phi(1), \therefore P(\max\{X_1, X_2, X_3\} < 5) = [\Phi(1)]^3 = 0.5955$$

$$(2) P(\{-2.5 < X_1 < 3.5\} \cup \{2 < X_3 < 6.5\}) = P(-2.5 < X_1 < 3.5) + P(2 < X_3 < 6.5)$$

$$- P(\{-2.5 < X_1 < 3.5\} \cap \{2 < X_3 < 6.5\})$$

$$P(-2.5 < X_1 < 3.5) = \Phi\left(\frac{1.5}{3}\right) - \Phi\left(-\frac{4.5}{3}\right) = \Phi(0.5) - \Phi(-1.5)$$

$$= \Phi(0.5) + \Phi(1.5) - 1 = 0.6247$$

$$P(2 < X_3 < 6.5) = \Phi(1.5) - \Phi(0) = 0.4332$$

$$\therefore P(\{-2.5 < X_1 < 3.5\} \cup \{2 < X_3 < 6.5\}) = 0.7873$$

$$(3) E(X_1^2 X_2^2 X_3^2) = E(X_1^2) \cdot E(X_2^2) \cdot E(X_3^2) = E(X^2)^3 = 13^3 = 2197$$

$$(4) D(X_1 X_2 X_3) = E(X_1^2 X_2^2 X_3^2) - [E(X_1 X_2 X_3)]^2 = 2133$$

$$D(2X_1 - 3X_2 - X_3) = 4D(X_1) + 9D(X_2) + D(X_3) = 126$$

$$\text{补充题: } F_{X_{(10)}}(x) = F(x)^{10} = \Phi\left(\frac{x-1}{\sqrt{3}}\right)^{10}$$

$$P(X_{(10)} > x_{0.1}) = 0.1 \Rightarrow \Phi\left(\frac{x_{0.1}-1}{\sqrt{3}}\right)^{10} = 0.9 \Rightarrow \frac{x_{0.1}-1}{\sqrt{3}} = 2.31$$

$$x_{0.1} = 5$$