Quiz for Week 11

This is a preview of the published version of the quiz

Started: 15 Nov at 15:29

Quiz instructions

Quiz time is from 17.15 to 18.00 of November 01, 2023.

Question 1 — 1 pts

Let $\{X_1, X_2, \ldots, X_n\}$ be a random sample from the $\text{Bernoulli}(p)$ distribution, where $n > 10$. Which of the following is not a statistics?

- ○ $X_1 + 0.5X_2$
- ○ $\frac{X_1+X_2+X_n}{3}$
- ◉ $\frac{(X_{10}-X_4)^2}{\text{var}(X_2)}$
- ○ None of the given options

Question 2 — 1 pts

Let $\{X_1, X_2, \ldots, X_{100}\}$ be a random sample from the $N(0, \sigma^2)$ distribution. Which of the following is **WRONG**?

- ○ The sample variance $S^2 = \frac{\sum_{i=1}^{100}(X_i-\bar{X})^2}{99}$ is an unbiased estimator for σ^2.
- ○ Let $\widetilde{S}^2 = \frac{\sum_{i=1}^{100} X_i^2}{100}$. Then $\widetilde{S}^2$ is an unbiased estimator for σ^2.
- ◉ $X_1 + X_2 + \ldots + X_{10}$ has a bigger variance than $X_1 + X_2 + \ldots + X_{100}$.
- ○ $\frac{X_1+X_2+\ldots+X_{10}}{10}$ has a bigger variance than $\overline{X}$.

Question 3

1 pts

The observed values of a random sample of size 5 from the $N(\mu, 1)$ distribution are given by $\{6.0, 7.0, 5.5, 7.1, 5.9\}$. Which of the following is/are unbiased estimate(s) for μ?

- ○ $\bar{x} = 6.3$
- ○ $\frac{x_1+x_2}{2} = 6.5$
- ○ $x_5 = 5.9$
- ◉ All are unbiased estimates

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