STA 4322

Spring 2020

Quiz 2

Full Name: _____

On my honor, I have neither given nor received unauthorized aid on this quiz

Signature: _____

This is a 10 minute quiz. There are 5 multiple choice problems, each having EXACTLY ONE correct answer. You may *not* use any books, other references, or text-capable electronic devices.

1. If $Y_1, Y_2, \cdots, Y_n$ is a random sample from a Normal population with mean μ and variance σ^2. Then the distribution of the sample mean $\bar{Y}$ is

   (a) Normal.

   (b) Gamma.

   (c) χ^2.

   (d) t.

2. In Problem 1 above, recall that the adjusted sample variance estimator S^2 is given by $\frac{1}{n-1}\sum_{i=1}^{n}(Y_i - \bar{Y})^2$. The distribution of $\frac{(n-1)S^2}{\sigma^2}$ is given by

   (a) Normal.

   (b) χ^2 with $n-1$ degrees of freedom.

   (c) Poisson.

   (d) t.

3. The MSE of S^2 is given by is given by

   (a) $\frac{2\sigma^4}{n-1}$.

   (b) σ^4.

   (c) σ^2.

   (d) $(n-1)\sigma^2$.

4. In Problem 1, the distribution of $\frac{\sqrt{n}(\bar{Y}-\mu)}{S}$ is

   (a) Normal.

   (b) Gamma.

   (c) t with $n-1$ degrees of freedom.

   (d) χ^2 with n degrees of freedom.

5. If $X \sim \text{Normal}(\mu, \sigma^2)$, then the distribution of $Z = (X - \mu)/\sigma$ is given by

   (a) Normal$(0, 1)$.

   (b) χ^2-distribution with $n - 1$ degrees of freedom.

   (c) $N(0, \sigma^2)$.

   (d) χ^2-distribution with n degrees of freedom.