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Question 1

Correct

Mark 1.00 out of 1.00

Suppose X has a normal distribution with unknown mean μ and unknown standard deviation σ . A sample X_1, X_2, \dots, X_{16} of i.i.d. random variables with distribution X is taken. The sample average of these 16 values comes out to be $\bar{X} = 10.2$ and the sample standard deviation is $S = 3.0$.

True or False: without knowing σ it is not possible to provide a 90% confidence interval for μ .

Select one:

- ☐ True
- ☒ False ✓

The correct answer is 'False'.

Question 2

Correct

Mark 10.00 out of 10.00

Suppose X has a normal distribution with unknown mean μ and unknown standard deviation σ . A sample X_1, X_2, \dots, X_{16} of i.i.d. random variables with distribution X is taken. The sample average of these 16 values comes out to be $\bar{X} = 10.2$ and the sample standard deviation is $S = 3.0$.

The distribution of $4/3(\bar{X} - \mu)/S$ is

- ☐ a. Normal(0,1)
- ☒ b. t distribution with 15 degrees of freedom ✓
- ☐ c. Normal (10.2, 3)
- ☐ d. t distribution with 10 degrees of freedom

Your answer is correct.

The correct answer is:

t distribution with 15 degrees of freedom

Question 3

Correct

Mark 10.00 out of 10.00

Suppose X has a normal distribution with unknown mean μ and unknown standard deviation σ . A sample X_1, X_2, \dots, X_{16} of i.i.d. random variables with distribution X is taken. The sample average of these 16 values comes out to be $\bar{X} = 10.2$ and the sample standard deviation is $S = 3.0$.

To calculate a 95% confidence interval for the actual mean μ the value of α, β in

$\beta = P(|\bar{X} - \mu| < \alpha)$ is

- ☐ a. 0.05, 0.95
- ☐ b. 1, 1
- ☐ c. 0, 0
- ☒ d. 0.95, 1.60



Your answer is correct.

The correct answer is:
0.95, 1.60

Question 4

Correct

Mark 10.00 out of 10.00

Suppose X has a normal distribution with unknown mean μ and unknown standard deviation σ . A sample X_1, X_2, \dots, X_{16} of i.i.d. random variables with distribution X is taken. The sample average of these 16 values comes out to be $\bar{X} = 10.2$ and the sample standard deviation is $S = 3.0$. What would be a 95% confidence interval for the actual mean μ ?

- ☐ a. (10.2, 11.2)
- ☐ b. (7.2, 13.2)
- ☐ c. (3, 10.2)
- ☒ d. (8.6, 11.80)



Your answer is correct.

The correct answer is:
(8.6, 11.80)

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