

QUIZ # 7

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20Problem # 1

If $\bar{X} = 50$, $S = 15$, $n = 16$, and assuming that the population is normally distributed construct a 99% confidence interval estimate of the population mean μ

$$\bar{x} = 50 \quad S = 15 \quad N = 16 \quad 99\% \text{ conf.} \quad 1 - .99 = .01 / 2 = .005$$

$$\bar{x} \pm t_{\alpha/2} \cdot \frac{S}{\sqrt{N}} \quad \text{df} = N - 1 = 16 - 1 = 15 \Rightarrow 2.9467$$

$$\left(50 + \left(2.9467 \cdot \frac{15}{\sqrt{16}} \right) \right) = 50 + 11.05 = 61.05$$

$$50 - \left(2.9467 \cdot \frac{15}{\sqrt{16}} \right) = 50 - 11.05 = 38.95$$

Problem # 2

$$38.95 \leq \mu \leq 61.05$$

If $\bar{X} = 85$, $\sigma = 8$, and $n = 64$, construct a 95% confidence interval estimate of the population mean μ

$$\bar{x} = 85 \quad \sigma = 8 \quad N = 64 \quad 95\% \text{ conf.} \quad 1 - .95 = .05 / 2 = .025 \Rightarrow 1.96$$

$$\bar{x} \pm z \cdot \frac{\sigma}{\sqrt{N}} = 85 + \left(-1.96 \cdot \frac{8}{\sqrt{64}} \right) = 83.04$$

$$85 - \left(-1.96 \cdot \frac{8}{\sqrt{64}} \right) = 86.96$$

$$95\% \text{ CI} = 83.04 \leq \mu \leq 86.96$$