

EXAM # 3**Problem # 1** 9.50

The quality control manager at a light bulb factory needs to estimate the mean life of a large shipment of light bulbs. The standard deviation is 100 hours. A random sample of 64 light bulbs indicated a sample mean life of 350 hours.

- a) Construct a 95% confidence interval estimate of the population mean life of light bulbs in this shipment.

$$\begin{array}{r} 374.978 \\ 325.022 \end{array}$$

- b) Do you think that the manufacturer has the right to state that the light bulbs last an average of 400 hours? Explain

No, they are between 374.98 & 325.02

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- c) Must you assume that the population of light bulb life is normally distributed? Explain

Problem # 2

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

$$(38.95 < \mu < 61.05)$$

Problem # 3

9.13

The manager of a paint supply store wants to determine whether the mean amount of paint contained in 1-gallon cans purchased from a nationally known manufacturer is actually 1 gallon. You know from the manufacturer's specifications that the standard deviation of the amount of paint is 0.02 gallon. You select a random sample of 50 cans, and the mean amount of paint per 1-gallon can is 0.995 gallon.

- a) Is there evidence that the mean amount is different from 1.0 gallon (use $\alpha = 0.01$).

$$t_{n-1} = \frac{0.995 - 1}{0.02/\sqrt{50}} = -1.7852$$

Fail to reject null hypothesis

7. b) Compute the p-value and interpret its meaning.

Problem # 4 *chapter 9 ppt - slide 9-41*

The average cost of a hotel room in New York is said to be \$168 per night. A random sample of 25 hotels resulted in $\bar{X} = \$172.50$ and $S = \$15.40$.

Test at the $\alpha = 0.05$ level. (Assume the population distribution is normal)

