STAT-319-Term 173-Sec.04

Quiz #3

Name: **ID** **SR:**

Q 1: The average lifetime of a light bulb is 3000 hours with a standard deviation of 696 hours. A simple random sample of 36 bulbs is taken.

a. What are the expected value, standard deviation, and the sampling distribution of the sample mean?

b. What is the probability that the average lifetime in the sample will be between 2670.56 and 2809.76 hours?

Q 2: A sample of size n = 100 produced the sample mean of 16. Assuming the population standard deviation $\sigma = 3$.

a. Compute a 95% confidence interval for the population mean μ.

b. How large should a sample be to estimate the population mean μ with an error not exceeding 0.5 at 95% confidence level?

Q.3 Bags of a certain brand of tortilla chips claim to have a net weight of 14 ounces. The net weights actually vary slightly from bag to bag and are normally distributed with mean μ. A representative of a consumer advocacy group wishes to see if there is any evidence that the mean net weight is less than advertised. For this, the representative randomly selects 16 bags of this brand and determines the net weight of each. He finds the sample mean to be 13.82 and the sample standard deviation to be 0.24.

a. Use these data to obtain a 95% confidence interval estimate for the population mean

b. Interpret the confidence interval in part (a).

Q.4. A random sample of 60 suspension helmets used by motorcycle riders and automobile racecars was subjected to an impact test, and some damage was observed on 18 of these helmets.

a. Find a 99% confidence interval on the true proportion of helmets that would damage from this test.

b. How many helmets must be tested to be 99% confident that the error in p is less than 0.02?