

Problem Set 5

1. Assume that you have a normal population with mean μ and standard deviation $\sigma = 15$. Suppose you have collected a sample of size 25 and the sample mean \bar{x} was found to be 81.

(a) Find a 99 percent confidence interval for μ .

(b) Find the margin of error at 99 percent level of confidence.

2. The tuition X paid by a student per semester in a university has a distribution with mean μ and $\sigma = \$416$. How large a sample should you draw so that you are 95 percent sure that the true value of μ will be within \$10 of the sample mean \bar{x} ?

3. Assume that we have normal populations with mean μ and standard deviation σ . We have a sample of size $n = 18$ that has sample mean $\bar{x} = 170.5$ and standard deviation $s = 13.3$. Find the margin of error and compute a 99 percent confidence interval for μ .

4. Suppose we collect a sample from a normal population of size $n = 40$ with sample mean $\bar{x} = 18.6$ and standard deviation $s = 9.486$. Construct a 95 percent confidence interval for mean μ .

5. Suppose that we have collected a sample of size $n = 26$ from a normal population with mean μ and variance σ^2 . The sample variance was found to be $s^2 = 26.7$. Compute a 95 percent confidence interval for σ^2 .