Constructing a Confidence Interval for a Population Mean (Known σ):

A technology company wants to estimate the true mean handling time (in seconds) for all customer service calls. To do so, they selected a random sample of 4 calls and calculated the mean handling time to be 110 seconds. Assuming the population of all call handling times is normally distributed, suppose the population standard deviation from past records has been 40 seconds. Construct and interpret a 99% confidence interval for the true mean handling time (μ) of all customer service calls. Based on this interval, does it appear that the true mean handling time (μ) is different from a previously established benchmark of 90 seconds? Show all steps using the SPDC structure.