ENGR/PHYS 216 – Spring 2023
HW Assignment 5: Confidence Intervals

Note: When appropriate, please indicate if you used old-school tables, your calculator, Python, etc

1. For a normal population with known population standard deviation σ, what is the confidence **level** for the following confidence **interval**?

$$\bar{x} - 1.13\sigma/\sqrt{n} \leq \mu \leq \bar{x} + 1.13\sigma/\sqrt{n}$$

2. In a random sample of 91 college students, the average number of Discord messages handled in one day is 216. The 95% confidence interval for the mean number of messages handled by students daily is given as 210 to 222.
   a. What is the population standard deviation?
   b. If the number of samples were doubled, what would be the new confidence **interval** (keeping the same confidence **level**?)

3. Airbnb hosts wish to learn the average length of stay of all visitors that are under the age of 35. A statistician determines that to calculate a 90.% confidence level estimate of the average length of stay to within +/- 2.0 days, a total of 102 young visitors' check-in/check-out records will have to be examined. How many records should be looked at to obtain a 90.% confidence level estimate to within +/- 1.0 days?