Math 152, Fall 2020
Jo Hardin
WU # 14
in-class: Thursday, 10/8/20
due: Friday, 10/9/20

Your Name: _____

Names of people you worked with: _____

Instructions: Work on this problem in class with your group (if you are attending class synchronously) or out of class (hopefully with a person or two! if you are attending class asynchronously). The problem should be done on a piece of paper with a pencil or on some kind of tablet. The problem should **not** by typed up or done in LaTeX.

Work for a *maximum* of 15 minutes on the problem (regardless of what time you are working). *Do not* come back to the problem to "fix it up" or "finish it." Be sure to write down the names of the people you worked with during class (or outside of class).

Take a picture of your work and use a scanning app to create a pdf (or create a pdf directly from your tablet). Upload your work to Gradescope (via Sakai) within 24 hours of class.

Task: In a previous warm-up (# 11) you found a CI for σ using the pivot around σ^2. That is, the first steps of the process were as follows.

Find a 95% CI for the true SD (i.e., σ) associated with dividends on foreign stocks.

If the dividends are actually normally distributed (not really a reasonable assumption here), then theory tells us that:

$$\frac{\sum(X_i - \overline{X})^2}{\sigma^2} \sim \chi^2_9$$

Using σ^2 to pivot (that is, putting σ^2 in the middle of the probability statement) we get:

$$P\left(\sum(X_i - \overline{X})^2/\chi^2_{9,.975} \leq \sigma^2 \leq \sum(X_i - \overline{X})^2/\chi^2_{9,.025} \right) \quad = \quad 0.95$$

Using the same notation as above, once more find the formula for the interval for σ, but now **explain** why the new interval is also a "confidence interval". Hint: what does it mean for a range of values to be a "confidence interval" ?