PSTAT 5A: Discussion Worksheet 06
Spring 2023, with *Ethan P. Marzban*

1. **(a)** If $X \sim \mathcal{N}(-3, \ 1.5)$, what is $\mathbb{P}(X \leq -2)$?

   (b) Find $\pi_{0.77}$, the value such that $\mathbb{P}(Z \leq \pi_{0.77}) = 0.77$ where $Z \sim \mathcal{N}(0, \ 1)$.

   (c) Find the 21.77^{th} percentile of the standard normal distribution.

   (d) Find the 10th percentile of the t_{21} distribution.

   (e) If $T \sim t_{37}$, what is $\mathbb{P}(T \leq -2.03)$?

   (f) If $T \sim t_{37}$, what is $\mathbb{P}(T \leq 2.03)$? **Hint:** Draw a picture!

2. Mark is interested in performing inference on the true proportion of UCSB students that use *Venmo*. As such, he takes a representative sample of 92 UCSB students and finds that 57% of these students use *Venmo*.

   (a) Identify the population.

   (b) Identify the sample.

   (c) Define the parameter of interest.

   (d) Define the random variable of interest.

   (e) Construct a 95% confidence interval for the true proportion of UCSB students that use *Venmo*. Be sure to check any/all relevant conditions, and interpret your interval.

   (f) Construct a 77% confidence interval for the true proportion of UCSB students that use *Venmo*.

3. A quality-control checker takes a representative sample of 35 *GauchoSnip*-brand scissors and finds that the sampled scissors have an average weight of 6 oz and a standard deviation of 1.4 oz.

   (a) Define the parameter of interest.

   (b) Define the random variable of interest.

   (c) Construct a 95% confidence interval for the true average weight of *GauchoSnip*-brand scissors, and interpret your interval.