Name: _____ **Date:** _____

PSTAT 5A: Discussion Worksheet 06

Spring 2023, with *Ethan P. Marzban*

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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 10^{th} percentile of the t_{21} distribution.

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

(f) If $T \sim t_{50}$, 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.