Practice- Sampling Distributions

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1. In a certain Safeway checkout line, the amount of time spent waiting until check out can be modelled by an exponential distribution with a mean of 5.2 minutes and a standard deviation 5.2 minutes. You stand at the checkout and observe $n = 35$ people and record how many minutes each of them spends waiting in line. You then average all these waiting times to obtain your sample mean $\overline{x}$.

   (a) Describe the distribution of $\overline{x}$ and requirements for the distribution.

   Solution: $\overline{x} \sim \text{normal}\left(5.2, \frac{5.2}{\sqrt{35}}\right)$

   (b) What is the probability that your sample mean will be less than 3.88 minutes?

   Solution: 0.0688

   (c) 10% of the time, the observed sample average waiting time will exceed what value?

   Solution: 6.326