Stat 171 - Worksheet for Section 6.2

Name: _____

1. Average of 3 numbers is 10. First 2 numbers are 12 and 7. What is the last number?

2. Average of 4 numbers is 10. First 2 numbers are 12 and 7. What are the last two numbers?

3. Find the critical value t_c for a 90% confidence interval when the sample size is 22. Interpret your result.

4. You randomly select 16 coffee shops and measure the temperature of the coffee sold at each. The sample mean temperature is 162.0°F with a sample standard deviation of 10°F. Construct 90% and 99% confidence intervals for the population mean temperature of coffee sold. Assume the temperatures are approximately normally distributed.
   (a) Verify σ is not known, the sample is random, and either the populations is normally distributed, or $n \geq 30$.
   (b) Find the sample statistics, $n, \bar{x}$, and s.
   (c) Identify degrees of freedom, the level of confidence c, and the critical value t_c.
   (d) Find the margin of error $E = t_c \frac{s}{\sqrt{n}}$.
   (e) Find the left and right endpoints of the confidence interval $\bar{x} - E$ and $\bar{x} + E$.

5. You randomly select 36 cars of the same model that were sold at a car dealership and determine the number of days each car sat of a the dealership's lot before it was sold. The sample mean is 9.75 days, with a sample standard deviation of 2.39 days. Construct 90% and 99% confidence intervals for the population mean number of days the car model sits on the dealership's lot. Compare the lengths of the intervals.

6. You randomly select 18 adult male athletes and measure the resting heart rate of each. The sample mean heart rate is 64 beats per minutes, withe a sample standard deviation of 2.5 beats per minute. Assuming the heart rates are normally distributed, should you use the standard normal distribution, the t-distribution, or neither to construct a 90% confidence interval for the population mean heart rate? Explain your reasoning.

   (a) Is σ known?

   (b) Is either the population normally distributed or $n \geq 30$?

   (c) Decide which distribution to use, if any.

   (d) Construct the confidence interval.