Stat 171 - Worksheet for Section 7.3

Name: ____

1. Find the critical values for a left-tailed test with $\alpha = 0.05$ and $n = 14$.

2. Find the critical values for a right-tailed test with $\alpha = 0.10$ and $n = 9$.

3. Find the critical values $-t_0$ and t_0 for a two tailed test with $\alpha = 0.05$ and $n = 16$.

4. An insurance agent says that the mean cost of insuring a two year old sedan is less than \$1200. A random sample of 7 similar insurance quotes has a mean cost of \$1125 and a standard deviation of \$55. Is there enough evidence to support the agent's claim at $\alpha = 0.10$? Assume that the population is normally distributed.
   (a) Identify the claim, and state H_0 and H_a.
   (b) Identify the level of significance α and the degrees of freedom.
   (c) Find the critical value t_0 and identify the rejection region.
   (d) Find the standardized test statistic. Sketch a graph.
   (e) Decide whether to reject the null hypothesis.
   (f) Interpret the decision in the context of the original claim.

5. An industrial company claims that the mean conductivity of water in a nearby river is 1890 milligrams per liter. The conductivity of a water sample is a measure of the total dissolved solids in the sample. You randomly select 39 water samples and measure the conductivity of each. The sample mean and the standard deviation are 2350 and 900 milligram per liter, respectively. Is there enough evidence to reject the company's claim at $\alpha = 0.01$?

   (a) Identify the claim, and state H_0 and H_a.

   (b) Identify the level of significance α and the degrees of freedom.

   (c) Find the critical value t_0 and identify the rejection region.

   (d) Find the standardized test statistic. Sketch a graph.

   (e) Decide whether to reject the null hypothesis.

   (f) Interpret the decision in the context of the original claim.