Stat 171 - Worksheet for Section 7.2

Name: _____

1. The p-value for a hypothesis test is $p = 0.0745$. What is your decision when the level of significance is
   (a) $\alpha = 0.05$
   (b) $\alpha = 0.10$
2. Find the p- value for a left-tailed hypothesis test with a standardized test statistic of $z = -1.71$. Decide whether to reject H_0 when the level is significance is $\alpha = 0.05$.
   (a) Use table for standard normal distribution to find the area that corresponds to $z = -1.71$.
   (b) Calculate the p-value for a left-tailed test, the are in the left tail.
   (c) Compare the p-value with α and decide whether to reject H_0.

3. Find the p-value for a two-tailed hypothesis test with a standardized test statistic of $z = 1.64$. Decide whether to reject H_0 when the level of significance is $\alpha = 0.10$.

4. Homeowners claim that the mean speed of automobiles traveling on their street is greater than the speed limit of 35 miles per hour. A random sample of 100 automobiles has a mean speed of 36 miles per hour. Assume that the population standard deviation is 4 miles per hour. Is there enough evidence to support the claim at $\alpha = 0.05$? Use p-value.
   (a) Identify the claim. Then state the null and alternative hypotheses.

   (b) Identify the level of significance.

(c) Find the standardized test statistic z.

(d) Find the p-value.

(e) Decide whether to reject the null hypothesis.

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

5. Find the critical values and rejection regions for a two-tailed test with $\alpha = 0.08$.
   (a) Draw a graph of the standard normal curve with an area of $\frac{1}{2}\alpha$ in each tail.
   (b) Use table for standard normal distribution to find areas that are closest to $\frac{1}{2}\alpha$ and $1 - \frac{1}{2}\alpha$.
   (c) Find the z-scores that correspond to these areas.
   (d) Identify rejection regions.

6. A researcher claims that the mean annual cost of raising a child is \$13,960. In a random sample the mean is \$13,725. The sample consists of 500 children. Assume the population standard deviation is \$2345. At $\alpha = 0.01$, is there enough evidence to reject the claim?
   (a) Identify the level of significance.
   (b) Find the critical values $-z_0$ and z_0, and identify the rejection regions.
   (c) Sketch a graph. Decide whether to reject the null hypothesis.
   (d) Interpret the decision in the context of the original claim.