\*\*State the null and alternative hypotheses in symbols and identify which represents the claim.

1. According to a recent survey, 74% of college students own an MP3 player.

\*\*Write sentences describing type I and type II errors for a hypothesis test of the indicated claim.

2. A police station publicizes that at most 20% of applicants become police officers.

\*\*State null and alternative hypothesis in words and in symbols. Then determine whether the hypothesis test is left-tailed, right-tailed, or two-tailed. Explain your reasoning.

3. A baseball team claims that the mean length of its games is less than 2.5 hours.

\*\*If a hypothesis test is performed, how should you interpret a decision that (a) rejects the null hypothesis? (b) fails to reject the null hypothesis?

4. A scientist claims that the mean incubation period for swan eggs is less than 40 days.

5. The standard deviation of the life of a certain type of lawn mower is at most 2.8 years.

6. One of your distributors reports an average of 150 sales per day. You suspect that this average is not accurate, so you randomly select 35 days and determine the number of sales each day. The sample mean is 143 daily sales with a standard deviation of 15 sales. At alpha = 0.01 is there enough evidence to doubt the distributor’s reported average? Use a P-value.

(a) Write the null and alternative hypothesis mathematically and identify the claim.

(b) Find the standardized test statistic z and its corresponding area.

(c) Find the P-value.

(d) Decide whether to reject or fail to reject the null hypothesis.

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

7. Does failing to reject the null hypothesis mean that the null hypothesis is true? Explain.