4. Normality For the hypothesis test in Exercise 1, what does it mean when we say that the test is *robust* against departures from normality?

5. Death Penalty Poll In a recent Gallup poll of 511 adults, 64% said that they were in favor of the death penalty for a person convicted of murder. We want to use a 0.01 significance level to test the claim that the majority of adults are in favor of the death penalty for a person convicted of murder.

a. Identify the null and alternative hypotheses.

b. Find the value of the test statistic.

c. Technology is used to find this *P*-value: 1.263996E-10. Express the *P*-value in ordinary notation, then determine what we should conclude about the original claim.

6. *P*-Value Find the *P*-value in a test of the claim that the mean IQ score of acupuncturists is equal to 100, given that the test statistic is $z = -2.00$.

7. Equivalent Methods Which of the following statements are true?

a. When testing a claim about μ, the *P*-value method, critical value method, and confidence interval method are all equivalent.

b. When testing a claim about a population proportion p, the *P*-value method, critical value method, and confidence interval method are all equivalent.

c. When testing a claim about any population parameter, the *P*-value method, critical value method, and confidence interval method are all equivalent.

8. Chi-Square Test In a test of the claim that $\sigma = 15$ for the population of IQ scores of Facebook friends, we find the the rightmost critical value is $\chi^2 = 71.420$. Is the leftmost critical χ^2 value equal to -71.420?

9. Conclusions True or false: In hypothesis testing, it is *never* valid to form a conclusion of supporting the null hypothesis.

10. Reliability True or false: If correct methods of hypothesis testing are used with a large simple random sample, the conclusion will always be true.

Review Exercises

1. True/False Characterize each of the following statements as being true or false.

a. In a hypothesis test, a very high *P*-value indicates strong support of the alternative hypothesis.

b. The Student t distribution can be used to test a claim about a population mean whenever the sample data are randomly selected from a normally distributed population.

c. When using a χ^2 distribution to test a claim about a population standard deviation, there is a very loose requirement that the sample data be from a population having a normal distribution.

d. When conducting a hypothesis test about the claimed proportion of adults who have current passports, the problems with a convenience sample can be overcome by using a larger sample size.

e. When repeating the same hypothesis test with different random samples of the same size, the conclusions will all be the same.

2. Leisure Time In a Gallup poll, 1010 adults were randomly selected and asked if they were satisfied or dissatisfied with the amount of leisure time that they had. Of this sample 657 said that they were satisfied and 353 said that they were dissatisfied. Use a 0.01 significance level to test the claim that $2/3$ of adults are satisfied with the amount of leisure time that they have.