

Elementary Statistics

Name: \_\_\_\_\_

Study Guide 24

Class: \_\_\_\_\_

Due Date: \_\_\_\_\_

Score: \_\_\_\_\_

No Work  $\Leftrightarrow$  No Points

Use Pencil Only  $\Leftrightarrow$  Be Neat & Organized

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1. (2 points) What is the purpose of performing hypothesis testing?

1. \_\_\_\_\_

2. (2 points) What are the main keywords on identifying the null hypothesis?

2. \_\_\_\_\_

3. (2 points) What are the main keywords on identifying the alternative hypothesis?

3. \_\_\_\_\_

4. What mathematical symbols do we use to express

(a) (2 points) the null hypothesis  $H_0$ ?

(a) \_\_\_\_\_

(b) (2 points) the alternative hypothesis  $H_1$ ?

(b) \_\_\_\_\_

5. (2 points) What kind of error is

(a) (2 points) type I error?

(a) \_\_\_\_\_

(b) (2 points) type II error?

(b) \_\_\_\_\_

6. Using the significance level  $\alpha$  notation,

(a) (2 points) find  $P(H_0 \text{ is valid})$

(a) \_\_\_\_\_

(b) (2 points) find  $P(H_1 \text{ is valid})$

(b) \_\_\_\_\_

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7. (2 points) What are the main methods when performing hypothesis testing?

7. \_\_\_\_\_

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8. (2 points) What are the type of testings when performing hypothesis testing and how do you determine that?

8. \_\_\_\_\_

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9. (2 points) What are the commonly used terminologies to express the final conclusion about the claim?

9. \_\_\_\_\_

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10. Suppose I claim that the mean age of all students at college is 30 years.

(a) (2 points) Express  $H_0$  and  $H_1$  using mathematical notation, and clearly identify the claim and type of testing.

(a) \_\_\_\_\_

(b) (2 points) Describe a situation of Type I Error assuming  $H_0$  is valid.

11. Suppose I claim that the proportion of all students at college that voted in the last presidential election was below 30%.

(a) (2 points) Express  $H_0$  and  $H_1$  using mathematical notation, and clearly identify the claim and type of testing.

(a) \_\_\_\_\_

(b) (2 points) Describe a situation of Type II Error assuming  $H_0$  is invalid.

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12. (2 points) Suppose I claim that the standard deviation of salaries of all nurses in southern California is more than \$450. Express  $H_0$  and  $H_1$  using mathematical notation, and clearly identify the claim and type of testing.

12. \_\_\_\_\_

13. 23] Suppose I claim that the average monthly income of all students at college is at least \$2000. Express  $H_0$  and  $H_1$  using mathematical notation, and clearly identify the claim and type of testing.

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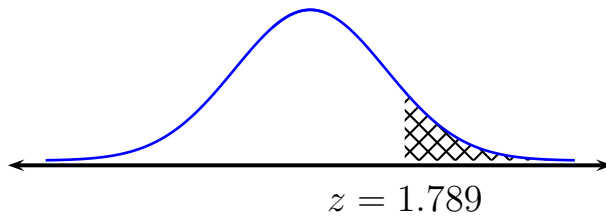
14. (2 points) Suppose I claim that the proportion of all students at college that carpool to the college is at most 25%. Express  $H_0$  and  $H_1$  using mathematical notation, and clearly identify the claim and type of testing.

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15. (2 points) What does P-Value represent? Explain

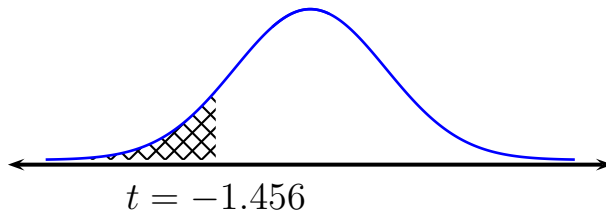
15. \_\_\_\_\_

16. (2 points) Find the shaded area.



16. \_\_\_\_\_

17. (2 points) Find the shaded area with  $df = 19$ .



17. \_\_\_\_\_

Drawing, Shading, Labeling, and TI Command Required.

18. Find twice the area

(a) (3 points) to the left of  $z = -1.725$ .

(a) \_\_\_\_\_

(b) (3 points) to the right of  $t = 1.468$  with  $df = 17$ .

(b) \_\_\_\_\_