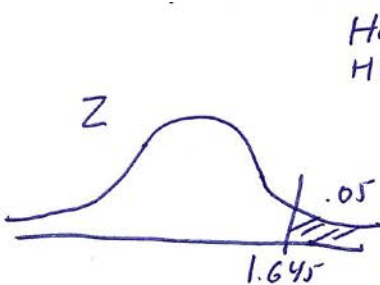


SOLUTIONS TO

TEST YOUR KNOWLEDGE: Hypothesis Testing

1. A company claims that there are no more than 5 grams of sugar in its new cheesecake. You decide to test the claim at a significance level (alpha) of .05. You randomly sample 121 packages of cheesecake made by the company and find the sample mean to be 5.6 grams of sugar with a sample standard deviation of .88 grams.

- (a) What are the null and alternate hypotheses?
 (b) Draw the picture of the distribution of the test statistic (under H_0). Include critical value(s) and region(s) of rejection.
 (c) What is the calculated (computed) value of the test statistic?
 (d) What is your conclusion?



$$H_0: \mu \leq 5 \text{ grams}$$

$$H_1: \mu > 5 \text{ grams}$$

$$Z = \frac{5.6 - 5.0}{.88 / \sqrt{121}} = \frac{.6}{.08} = 7.5$$

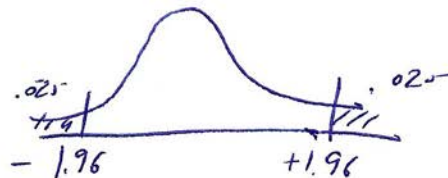
Reject H_0

2. A drug company claims that its new painkiller has exactly 5 mg. of codeine. You test the claim at a significance level (alpha) of .05. You randomly sample 100 pills made by the company and find the sample mean to be 4.7 milligrams of codeine with a sample standard deviation of .75 milligrams.

- (a) What are the null and alternate hypotheses?
 (b) Draw the picture of the distribution of the test statistics (under H_0). Include critical value(s) and region(s) of rejection.
 (c) What is the calculated (computed) value of the test statistic?
 (d) What is your conclusion?

$$H_0: \mu = 5 \text{ mg}$$

$$H_1: \mu \neq 5 \text{ mg}$$



$$Z = \frac{4.7 - 5.0}{.75 / \sqrt{100}} = \frac{-.3}{.075} = -4.00$$

Reject H_0