STAT212 Assignment 2

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1 Question 1

1.1 Part 1

$$\text{null hypothesis: } \mu = \$22.50$$
$$\text{alternative hypothesis: } \mu > \$22.50$$

Null hypothesis is that prices have not hiked and Quartz Emporium claims are correct which means mean amount of money spent per shopping trip to their store is still $22.50. WatchDogs wants to prove that this claim is wrong and thus the alternative hypothesis is that prices have hiked and the mean has increased.

1.2 Part 2

Since we do not know population s.d., we calculate the test statistic using the following formula:

$$t = \frac{\bar{X} - \mu_0}{\frac{s}{\sqrt{n}}}$$

$$\bar{X} = 25.84$$

$$s = 16.15$$

$$\sqrt{n} = \sqrt{50} = 7.07$$

$$t = \frac{25.84 - 22.50}{\frac{16.15}{7.07}} = 1.46$$

1.3 Part 3

$$\alpha = 1 - 0.9 = 0.1$$

$$\text{value of the standardized test statistic} = 1.299$$

1.4 Part 4

The rejection region is:
$$1.46 > 1.299$$

Since 1.46 is greater than 1.299 we reject the H_0 and WatchDogs is confident to make the accusation.

1.5 Part 5

$$\alpha = 1 - 0.95 = 0.05$$

$$\text{value of the standardized test statistic} = 1.677$$

1.6 Part 6

The rejection region is:
$$1.46 > 1.677$$

Since 1.46 is less than 1.677 we accept the H_0 and WatchDogs is not confident this time to make the accusation.