Sample #1

Directions: Show all your work. Indicate clearly the methods you use, because you will be scored on the correctness of your methods as well as on the accuracy and completeness of your results and explanations.

Anne reads that the average price of regular gas in her state is $4.06 per gallon. To see if the average price of gas is different in her city, she selects 10 gas stations at random and records the price per gallon for regular gas at each station. The data, along with the sample mean and standard deviation, are listed in the table below.

Station	1	2	3	4	5	6	7	8	9	10
Price ($)	4.13	4.01	4.09	4.05	3.97	3.99	4.05	3.98	4.09	4.02

Mean = $4.038   Standard deviation = $0.0533

Do the data provide convincing evidence that the average price of gas in Anne's city is different from $4.06 per gallon?

State: $H_0: M = 4.06$ $H_a: M \neq 4.06$ $\alpha = .05$

where M = mean price of gas at all stations in Anne's city

Plan: 1 Sample t test

Random sample ✓

10 is less than 10% of all stations in Anne's city ✓

Graph shows no outliers or strong skewness ✓

Do:

$$t = \frac{4.038 - 4.06}{0.0533/\sqrt{10}} = -1.31$$

$$df = 10 - 1 = 9$$

$.20 < p\text{-value} < .30$

(graph of t-distribution with 4.038 and 4.06 marked below)

Conclude: p-value > alpha. Fail to reject H_0. We do not have sufficient evidence to conclude that the price of gas in Anne's city is different than $4.06.

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Do the data provide convincing evidence that the average price of gas in Anne's city is different from $4.06 per gallon?

$H_0: \bar{X} = 4.06$

$H_a: \bar{X} \neq 4.06$

T - test

p-value = .2242

p-value > .05 → fail to reject H_0.

There is convincing evidence that the mean price of gas in Anne's city is $4.06.