

## Assignment 3:-

A car believes that the percentage of citizens in city ABC that owns a vehicle is 60% or less. A sales manager disagree with this. He conducted a hypothesis testing surveying 250 residents & found that 170 residents responded yes to owning a vehicle.

a) State a null & alternate hypothesis..

b) At a 10% significance level, is there enough evidence to support the idea that vehicle owner in ABC city is 60% or less.

⇒

1- Tail

$$H_0 : P_0 \leq 60\%$$

$$H_1 : P_1 \geq 60\%$$

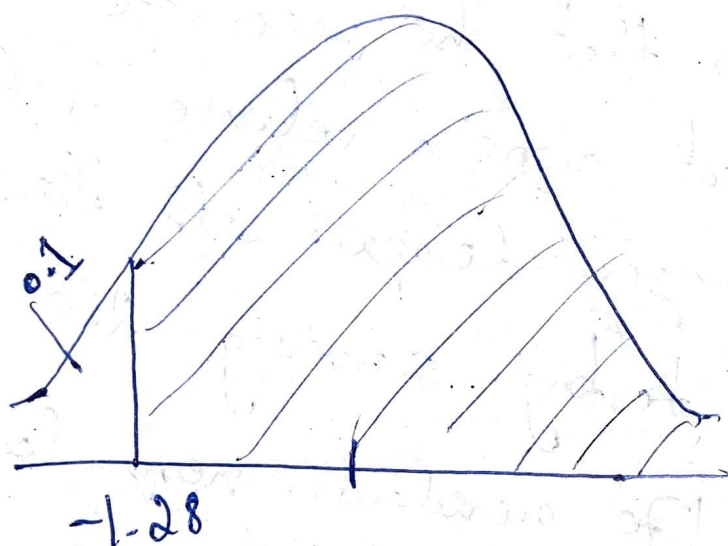
$$n = 250, \quad x = \cancel{180} \quad 170$$

$$\hat{p} = \frac{x}{n} = \frac{\cancel{180}}{250} = \frac{170}{250} = 0.68$$

$$q_0 = 1 - p_0 = 1 - 0.6 = 0.4$$

$$2) \quad \alpha = 0.1$$

3)



4) Z-test with proportion.

$$Z\text{-test} = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0 q_0}{n}}} = \frac{0.68 - 0.6}{\sqrt{\frac{0.6(0.4)}{250}}}$$

$$Z\text{-test} = 2.581$$

$2.581 > -1.28$  { Accept null Hypothesis