Assignment :-

A car company belives that the percentage of residents in city ABC that owns a vechicle is 60% or less. A sales Manager disagrees with this. He conducts a hypothesis testing surveying 250 residents and found that 170 responded yes to owning a vechicles.

a) State Null and alternate hypothesis

b) At 10% significance level, is there enough evidence to support the idea that vehicle ownership in city ABC is 60% or less?
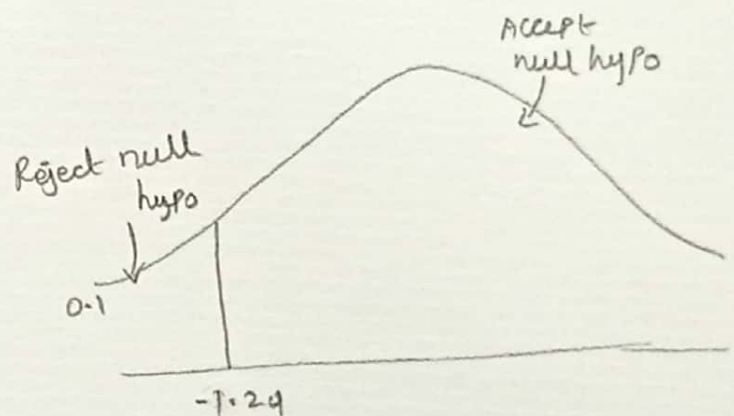
a) $H_0 : P_0 \geq 60\%$.

$H_1 : P_0 < 60\%$.

b) $n = 250$ $x = 170$

$\hat{P} = \dfrac{x}{n} = \dfrac{170}{250} = 0.68$

$q_0 = 1 - P_0 = 1 - 0.6 = 0.4$

$\alpha = 0.1$

Reject null hypo

0.1

-1.29

Accept null hypo

z test with Proportion

$$Z = \frac{\hat{P} - P_0}{\sqrt{\frac{P_0 q_0}{n}}} = \frac{0.68 - 0.6}{\sqrt{\frac{0.6 \times 0.9}{250}}} = 2.582$$

$\therefore$ $2.582 > -1.29$ { Accept null hypothesis }