(8.)

A car company believes 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 responsed yes to owning a vechile.

(a) State the 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?

Ans.

(a) Null hypothesis (H_0): $P_0 \leq 0.6$

Alternate hypothesis (H_1): $P_0 > 0.6$

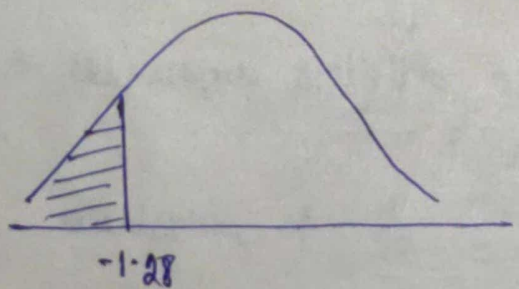
$n = 250$, $x = 170$

So the proportion $(\hat{P}) = \frac{170}{250} = 0.68$

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

$\alpha = 0.10$

$c1 = 90\%$



'z' test $= \frac{\hat{P} - P_0}{\sqrt{\frac{P_0 q_0}{n}}}$

$= \frac{0.68 - 0.60}{\sqrt{\frac{0.60 \times 0.40}{250}}} = 2.58$

$2.58 > -1.28$

(Accept the null hypothesis)