Q. A car belives that the percentage of citizens in city ABC that owns a vehicle is 60% or less. A ~~class~~ Sale manager disagrees with this. He conducted a hypothesis testing Surveying 250 residents & found that 170 residents responded yes to owning a vehicle

a) State the null & alternate hypothesis.

b) At α = 10% Significance level, is there enough evidence to support the idea that vehicle ower in ABC City is 60% or less.

Solution:-

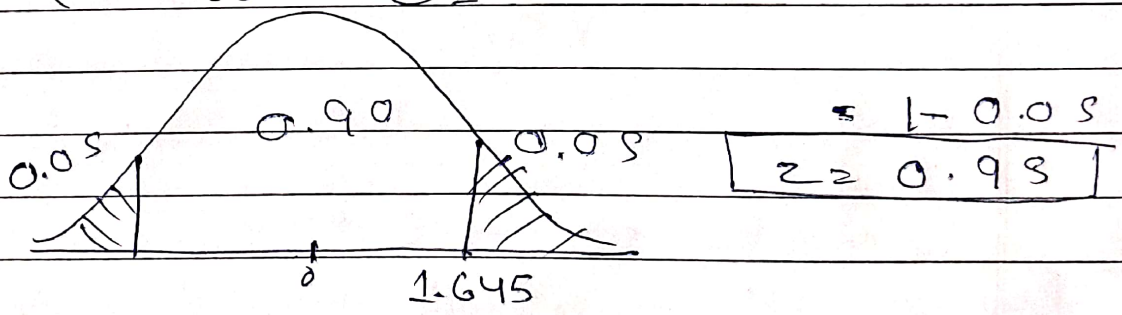
$H_0 : p \leq 0.60$ $\quad n = 250$

$H_1 : p > 0.60$ $\quad x = 170$

$$\hat{p} = \frac{170}{250} = 0.68$$

$p_0 = 0.60$ $\quad q_0 = 1 - p_0 = 0.40$

$\alpha = 0.10$ $\quad CI = 0.90$



$= 1 - 0.05$

$z = 0.95$

$$z_0 = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0 q_0}{n}}} = \frac{0.68 - 0.60}{\sqrt{\frac{0.60(0.40)}{250}}}$$

$$= \frac{0.08}{0.030984}$$

$$= 2.58$$

$1.645 < 2.58$

the reject the null hypothesis and accept the alternate hypothesis

At the 10% Significance level there is enough evidence to reject the idea that the vechicle owner in city ABC is 60% or less ~~we have~~ so we have enough evidence believes more the 60%.