

$$\begin{aligned}\text{Lower Fence} &= \bar{x} - z_{\alpha/2} \frac{\sigma}{\sqrt{n}} \\ &= 520 - 1.29 \times \frac{100}{\sqrt{25}} \\ &= 494.20\end{aligned}$$

$$\begin{aligned}\text{Higher Fence} &= \bar{x} + z_{\alpha/2} \frac{\sigma}{\sqrt{n}} \\ &= 520 + 1.29 \times \frac{100}{\sqrt{25}} \\ &= 545.80\end{aligned}$$

Q3. A car company believes that the percentage of a resident in the city ABC that owns a vehicle 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 vehicle.

- (a) State the null/Alternative Hypothesis  
(b) At 10% significance level, is there enough evidence to support the idea the vehicle ownership in the ABC is 60% or less.

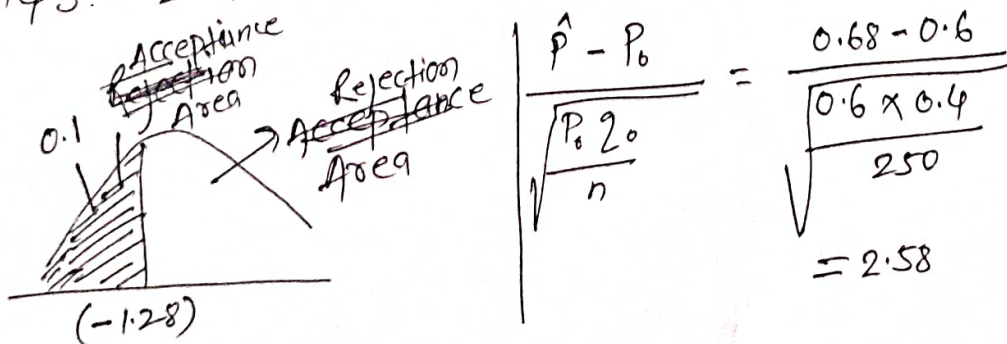
Ans:-  $n = 250$ ,  $x = 170$   $\alpha = 0.9$

$$\begin{array}{l|l} H_0: P_0 \leq 60\% & \hat{p} = \frac{x}{n} = \frac{170}{250} = 0.68 \\ H_1: P_0 > 60\% & z = (1 - P_0) = 1 - 0.6 = 0.4 \end{array}$$

Step-2:-

$$\alpha = 0.9 \quad 1 - 0.9 = 0.1$$

Step 3:- Z-test with Proposition:-



$2.58 > (-1.28)$  So, we ~~Accept~~<sup>Reject</sup> the null Hypothesis.