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Q A car company believes that percentage of residents in city ABC that owns a vehicle is 60% or less. A sales manager disagrees with this. He conducts a hypothesis testing survey of 250 resident and found that 150 responded yes to having a vehicle

a) State the Null and Alternate hypothesis

b) At 10% significance level, is there enough evidence to support the vehicle ownership in city ABC is 60% or less?

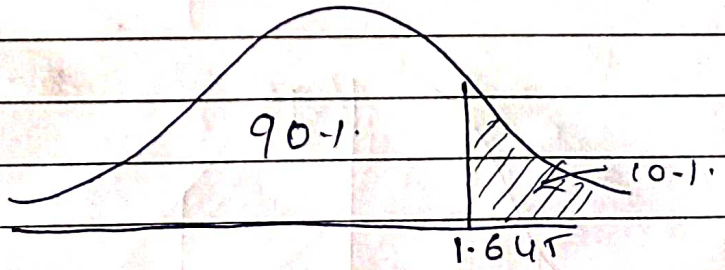
⇒ a) $H_0 : P \leq 60\%$

$H_1 : P > 60\%$

1) $n = 250$, $x = 170$ $\quad \hat{P} = \frac{x}{n} = \frac{170}{250} = 0.68$

2) $P_0 = 0.60$, $q_0 = 1 - 0.60 = 0.40$

3) $\alpha = 0.1$



$$z = \frac{\hat{P} - P_0}{\sqrt{\frac{P_0 \cdot q_0}{n}}} = \frac{0.68 - 0.60}{\sqrt{\frac{0.60 \times 0.40}{250}}} = \frac{0.80}{\sqrt{0.00096}} = \frac{0.08}{0.03098}$$

$$= \boxed{2.58}$$

$2.58 > 1.645$

Hence we Reject the Null Hypothesis