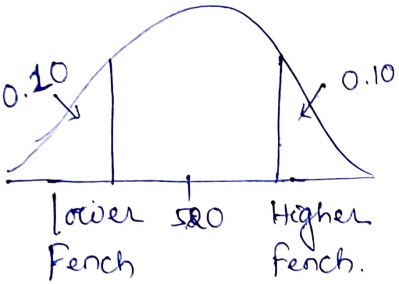
Assignment :-

Q) In the quant test of CAT Exam, the population standard deviation is known as to be 100. A sample of 25 test takers has a mean of 520. Construct a 80% C.I. about the mean?

Ans → Here $\sigma = 100$, $n = 25$, $\bar{x} = 520$.

Here C.I = 80%.

Significance value α = 1 - C.I = 1 - 80% = 1 - 0.80 = 0.20



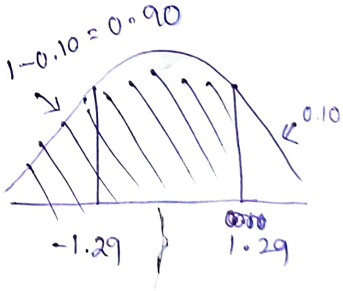
1 - 0.10 = 0.90

point Estimate ± Margin of Error

$$\bar{x} \pm Z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$$

Here $Z_{\alpha/2} = Z_{\frac{0.20}{2}} = Z_{0.10}$

$= 1.29$



lower Fench = $\bar{x} - Z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$

$= 520 - Z_{0.10} \left(\frac{100}{\sqrt{25}}\right) = 520 - 1.96 \times 20 = 480.8$

Higher fench = $\bar{x} + Z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$

$= 520 + 1.96 \times 20 = 559.2$