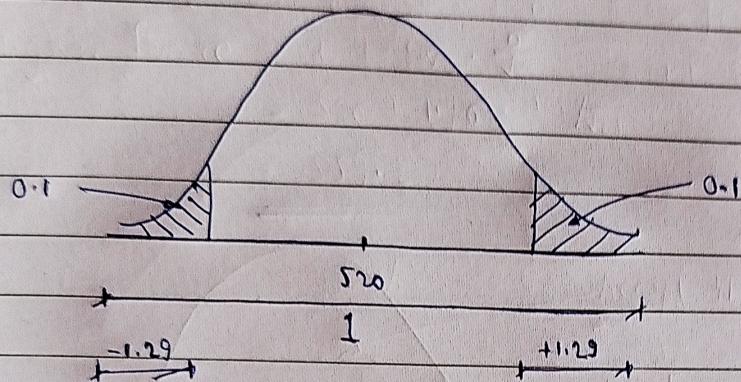


- Assignment-1) In the quant test of CAT exam, the population SD. is known to be 100. A sample of 25 test takers had a mean of 520. Construct 80% CI about Mean?

Ans. $\Rightarrow \sigma = 100, n = 25, \bar{x} = 520 \text{ f } C.I. = 80\% = 0.80$



Now, C.I. = Point Estimate + Margin of Error

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

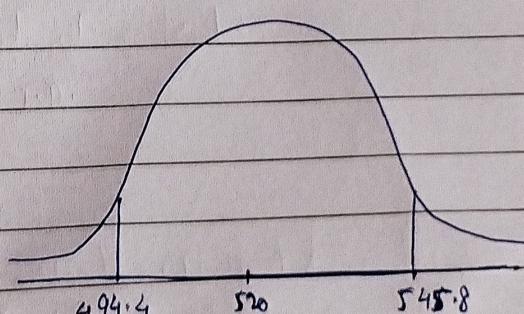
$$\therefore Z_{\alpha/2} = Z_{0.2} = Z_{0.1}$$

$$\left[\because \frac{100-80}{100} = \frac{20}{100} = \underline{\underline{0.2}} \right]$$

Now, $1 - 0.1 = 0.9$ f from z-table for value of 0.9 , $\underline{\underline{Z\text{-Score} = 1.29}}$

$$\therefore Z_{\alpha/2} = Z_{0.1} = 1.29$$

$$\begin{aligned} \text{f Lower fence} &= \bar{x} - Z_{\alpha/2} \times \frac{\sigma}{\sqrt{n}} \\ &= 520 - 1.29 \times \frac{100}{\sqrt{25}} \\ &= 520 - 1.29 \times 20 \\ &= \underline{\underline{494.2}} \end{aligned}$$



$$\begin{aligned} \text{f Higher fence} &= \bar{x} + Z_{\alpha/2} \times \frac{\sigma}{\sqrt{n}} \\ &= 520 + 1.29 \times 20 \\ &= \underline{\underline{545.8}} \end{aligned}$$