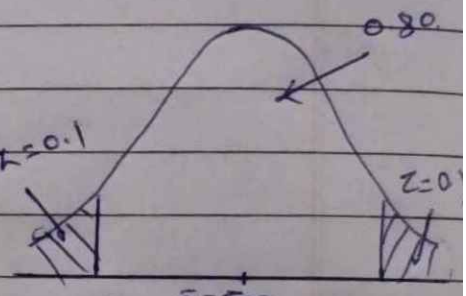
Q. In the quant test of CAT exam, the population standard daviation is know to be 100. A sample of 25 test takers has a mean of 520. construct a 80% CI about the mean?

Ans → Given- $\sigma = 100$, $n = 25$, $\bar{x} = 520$

$CI = 80\% = 0.80$



$\alpha = 1 - CI$

$\alpha = 1 - 0.80 = 0.20$

Here. $Z_{\alpha/2} = Z_{0.20/2} = Z_{0.1} =$

Now $1 - 0.1 = 0.9$ & from z table value of 0.9 Z score is $= 1.29$

From Z table $Z_{\alpha/2} = Z_{0.1} = 1.29$

Lower fence $= \bar{x} - Z_{\alpha/2}(\sigma/\sqrt{n})$

$= 520 - \left[1.29\left(100/\sqrt{25}\right)\right]$

$= 520 - 1.29(20)$

$= 494.2$

Higher fence $= \bar{x} + Z_{\alpha/2}(\sigma/\sqrt{n})$

$= 520 + 1.29\left(\frac{100}{\sqrt{25}}\right)$

$= 545.8$