

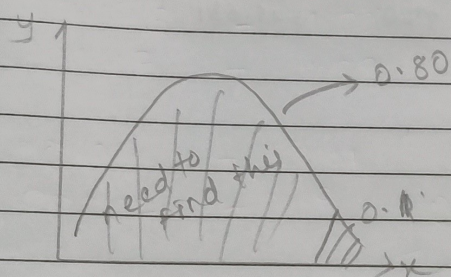
Q. In a Quant test of CAT exam, the population standard deviation is 100. A sample of 25 test takers has a mean of 520. Construct a 80% C.I about the mean?

→ $\bar{x} = 520$, $\sigma = 100$, C.I. = 80%, $n = 25$
Use z table as population std. deviation is given

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

$$\begin{aligned} \alpha &= 1 - \text{C.I.} \\ &= 1 - 0.80 \\ &= 0.20 \end{aligned}$$

$$Z \frac{0.20}{2} = Z_{0.10}$$



$$1 - 0.1 = 0.90$$

As under z table, we do not have value for 0.90 we take the nearest value & find z

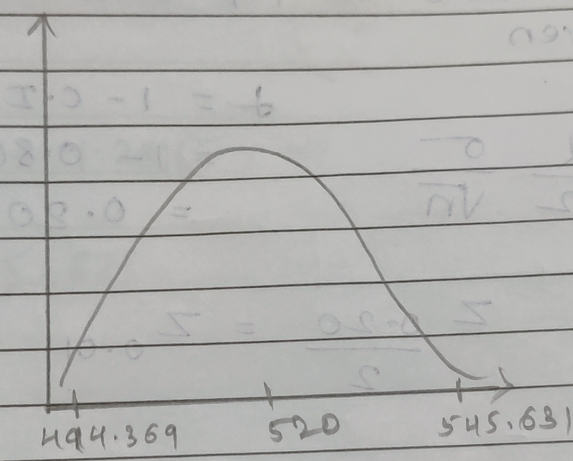
0.90 will be in between

$$\text{of } 0.89973 = 1.28 \text{ \& } 0.90147 = 1.29$$

$$z = 1.28155$$

$$\begin{aligned} \text{Lower fence} &= \bar{x} - z_{\frac{\alpha}{2}} \frac{\sigma}{\sqrt{n}} \\ &= 520 - 1.28155 \left(\frac{100}{\sqrt{25}} \right) \\ &= 494.369 \end{aligned}$$

Higher Fence = $\bar{x} + z \frac{s}{\sqrt{n}}$
 $= 520 + 1.28155 \left(\frac{100}{\sqrt{25}} \right)$
 $= 520 + 1.28155 (20)$
 $= \underline{\underline{545.631}}$



0.0 = 1.0 - 1

nearest value of 0.001 is 0.0012

0.0012 = 1.28155

Fence = $\bar{x} - z \frac{s}{\sqrt{n}}$

$= 520 - 1.28155 \left(\frac{100}{\sqrt{25}} \right)$

$= 520 - 1.28155 (20)$

$= 520 - 25.631$

$= 494.369$