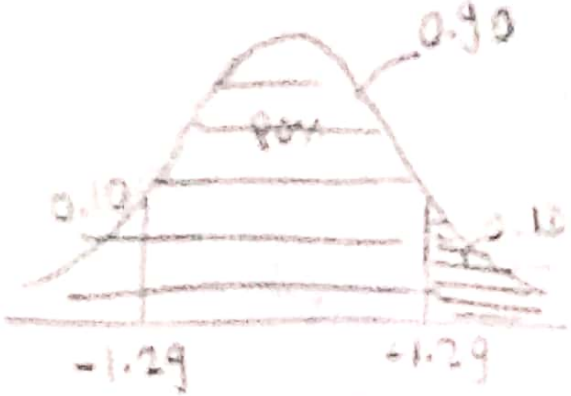
Q2]. In a quant test of the CAT exam, the population s.d is known to be 100. A sample of 25 tests taken has a mean of 520. Construct an 80% CI about the mean.

$\Rightarrow$

$\sigma = 100, \bar{x} = 520, n = 25$



Point Estimate $\pm$ Margin Error

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

$$\text{Lower Fence} = \bar{x} - Z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$$

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

$$Z_{0.20/2} = 0.10$$
$$= 1 - 0.10$$
$$= 0.90$$
$$= 1.29$$

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

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

$= 520 - 1.29(20)$

$= 494.2$

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

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

$= 520 + 1.29(20)$

$= 545.8$

$[494.2 \longleftrightarrow 545.8)$

with 80% C.I about the mean.