Assignment-1

In the quant test of CAT exam the population standard deviation is known to be 100. A same of 25 test takers has a mean of 520. construct a 80% C.I about mean?

Soln:- $\sigma = 100$ $n = 25$ $\bar{x} = 520$

C.I = 80%.

condidence Interval = point estimate ± margin of error

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

$\alpha = 1 - 0.80$

$= 0.20$

$Z = \frac{0.20}{2}$, $Z_{0.10} = 1.3$

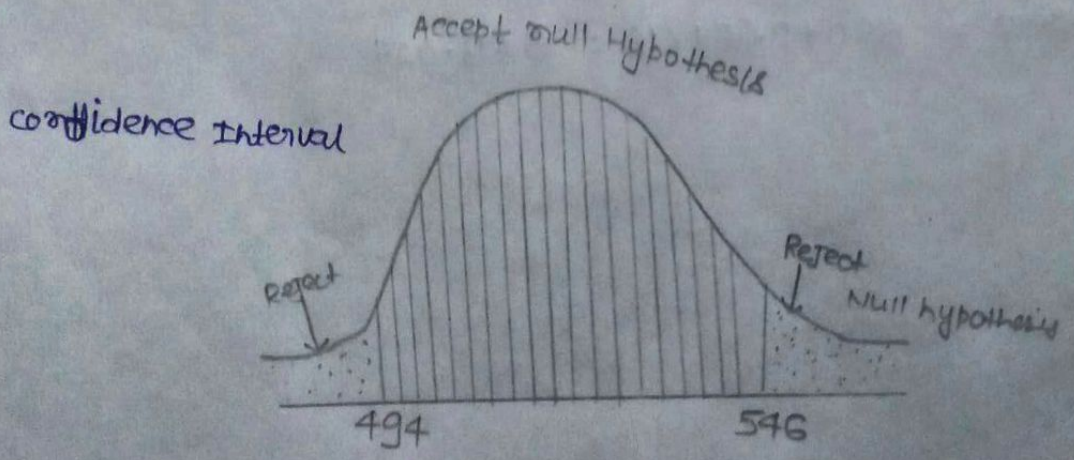
Lower fence $= \bar{x} - Z\frac{\alpha}{2}\frac{\sigma}{\sqrt{n}}$

$= 520 - 1.3 \times \frac{100}{\sqrt{25}}$

$= 520 - 1.3 \times \frac{100}{5} = 494$

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

$520 + 1.3 \times 20 = 546$



Assignment-2

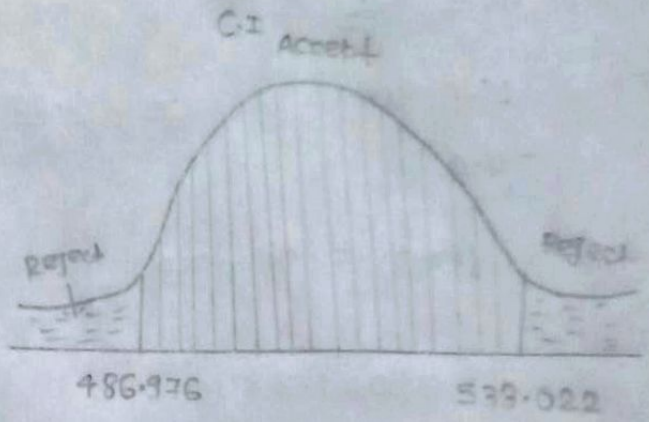
On the quant test of CAT exam, a sample of 25 test of takers Has a mean of 520 with a sample standard deviation of 80 construct 95% CI about the mean?

$\bar{x} = 520$ $S = 80$ C.I = 95% $n = 25$

Confidence interval = point estimate ± margin of error

$$\bar{x} \pm t_{\frac{\alpha}{2}} \frac{S}{\sqrt{n}}$$

$\alpha = 1 - 0.95 = 0.05$



Degree of freedom

$n = 1$

$25 - 1 = 24$

$t_{\frac{\alpha}{2}} = 2.064$

Lower fence $= \bar{x} - t_{\frac{\alpha}{2}} \frac{S}{\sqrt{n}}$

$= 520 - 2.06 \times \frac{80}{\sqrt{25}}$

$= 520 - 2.064 \times \frac{80}{5}^{16}$

$= 520 - 2.064 \times 16$ ~~553.024~~ 486.976

Higher fence $= 520 + 2.064 \times 16 = 553.024$