iNeuron

Session – 2022-23

ASSIGNMENT – STATISTICS

TOPIC - TO FIND CONFIDENCE INTERVAL

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Assignment - 2

In the Quant test of CAT Exam, the population Standard deviation is known to be 100. A Sample of 25 test take us as a mean 520. Construct a 80% confidence interval about mean.

So:- From the above problem, we have

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

80% confidence interval ≈ 0.80

$$\alpha = 1 - 0.80 = 0.20$$
$$\alpha/2 = 0.10$$

$$Z_{0.10} = \pm 1.29$$

We know that

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

$$= 520 - Z_{0.10} \frac{100}{\sqrt{25}}$$

$$= 520 - 1.29 \times \frac{100}{5}$$

$= 520 - 1.29 \times 20$

$= 520 - 25.8$

$= 494.8$

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

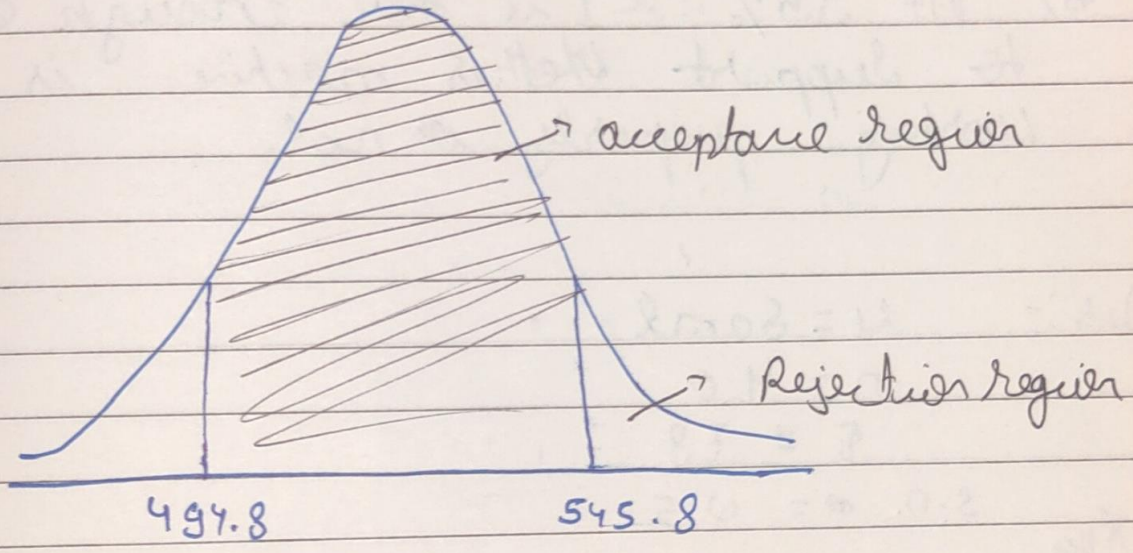
$= 520 + Z_{0.10} \frac{100}{\sqrt{25}}$

$= 520 + 1.29 \times 20$

$= 520 + 25.8$

$= 545.8$

Here



So, we conclude that the sample lie within the shaded region will be accepted and outside of that will be rejected.