Stats Assignment

Q1) In quant test of CAT exam, the population standard deviation is known to be 100. A sample of 25 test takers has a mean of 520. Construct a 80% confidence interval about mean.

soln. Standard deviation $\sigma = 100$

Sample $n = 25$

Sample Mean $\bar{x} = 520$

Significance value $\alpha = 0.2$

$\therefore Z_{\alpha/2} = Z_{\frac{0.2}{2}} = Z_{0.1}$

from Z table, we got $Z_{\alpha/2}$ value as 1.28

Hence,

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

$= 520 - 1.28 \times \dfrac{100}{\sqrt{25}} = 494.4$

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

$= 520 + 1.28 \times \dfrac{100}{\sqrt{25}} = 545.6$

Accept the null hypothesis

Reject the null hypothesis

Reject the null hypothesis

494.4   520   545.6

← Confidence interval →