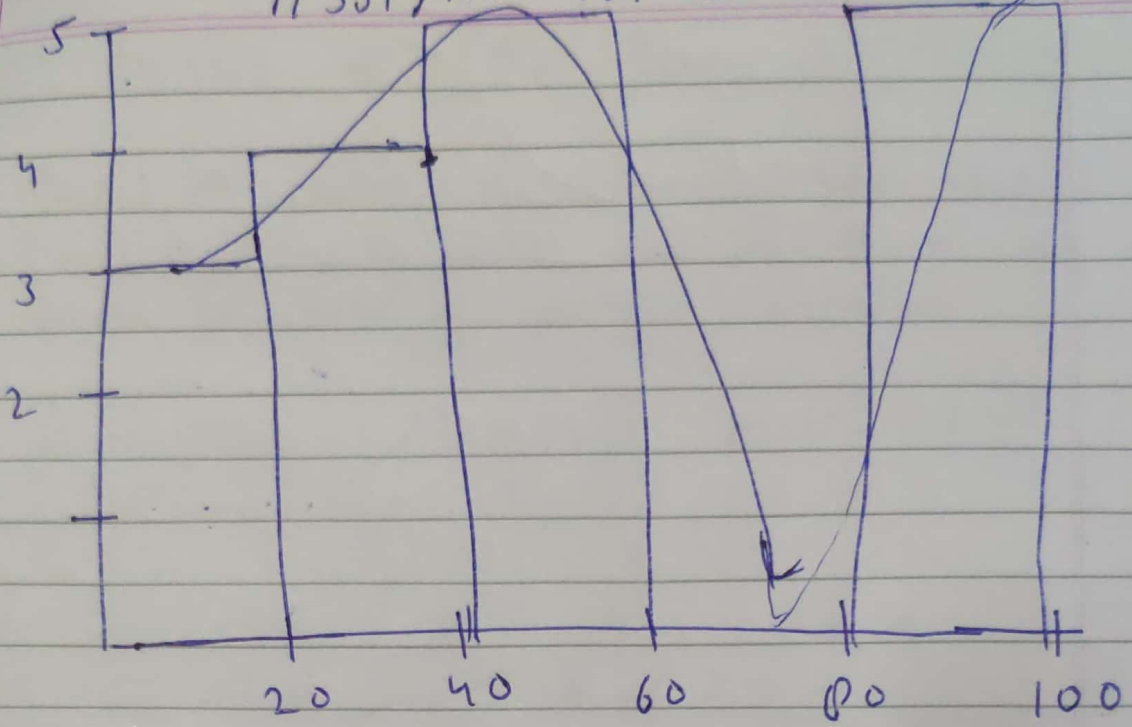
Assignment -1

Ans 1



Ans 2 $\sigma = 100$, $n = 25$, $\bar{x} = 520$

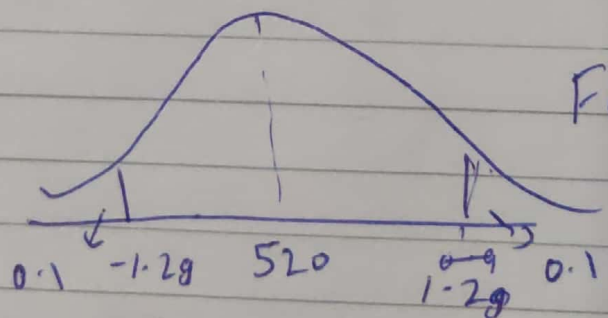
C.I = 80%

We know Population S.D

So, we go for Z-test

$\alpha = 1 - C.I$

$\alpha = 0.20$



From Z table

Point estimate ± margin of error

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

$Z_{\alpha/2} = Z_{0.1} =$

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

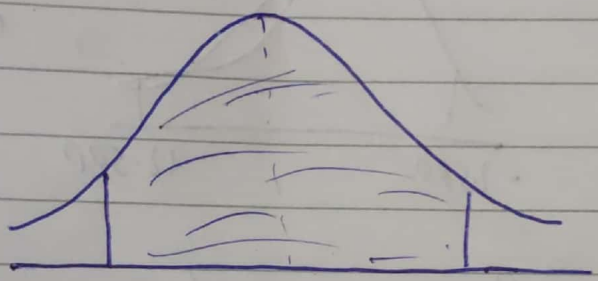
$= 520 - 1.28 \times \frac{100}{5}^{20}$

$= 494.4$

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

$= 520 + 1.28 \times \frac{100}{5}$

$= 545.6$



Ans.3 $n = 250$ % of People owning a car $= \frac{170}{250} \times 100 = 68\%$

(a) Null hypothesis

H_0 = citizens in ABC that own vehicle is less than 60% $= 68\%$

$H_0 = P_0 <= 60\%$

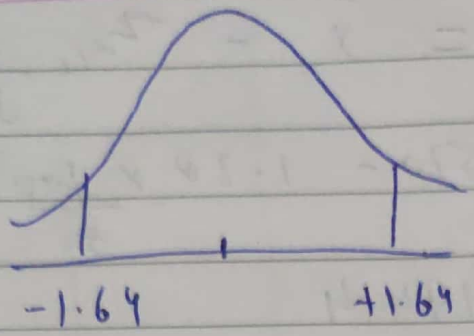
$H_1 = P_0 > 60\%$

(b) $\alpha = 0.1$ $\hat{P} = x/n = 170/250 = 0.68$

For this we have to use Zest with Proportion

$$Z_{est} = \frac{\hat{P} - P_0}{\sqrt{\frac{P_0 q_0}{n}}} = \frac{0.68 - 0.60}{\sqrt{\frac{0.6 \times 0.4}{250}}} = \frac{0.08}{0.0309}$$

$Z_{est} = 2.588$



$\alpha = 0.1$

$1 - 0.05$

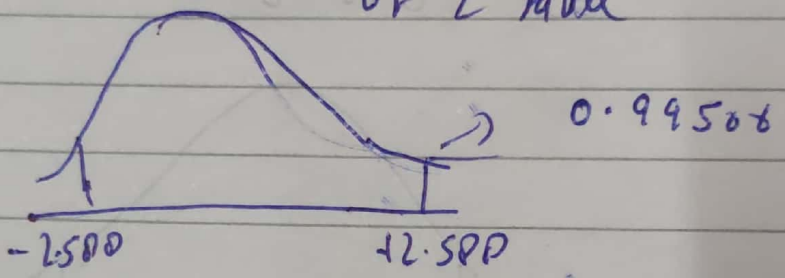
0.95

$Z_{test} > 1.64$

So, we reject the null hypothesis

Also, by P value method

by z table



$P\ value = 2(1 - 0.99506)$

$= 2(0.00494)$

$= 0.00988$

$0.00988 < 0.1$

We reject the null hypothesis.

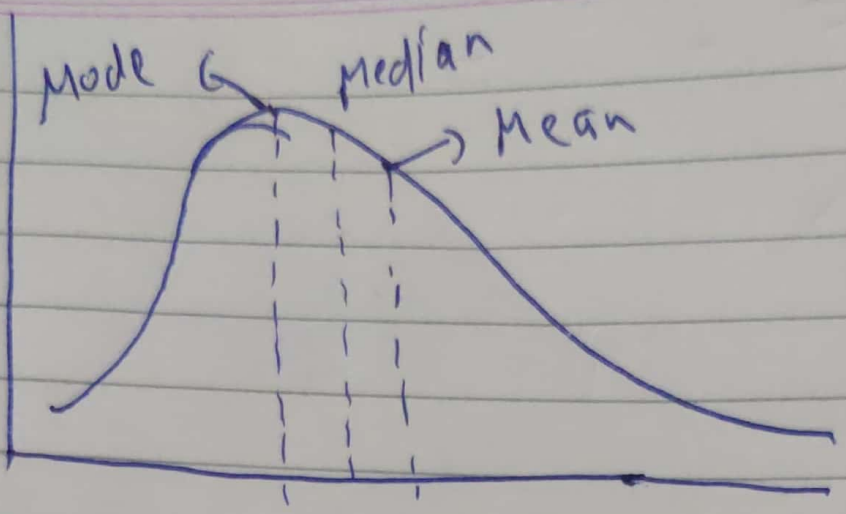
Q.4 2, 2, 3, 4, 5, 5, 5, 6, 7, 8, 8, 8, 8, 8, 9, 9, 10, 11, 11, 12

99 Percentile

$= \frac{99}{100} \times 20 \cong 20^{th}$ index

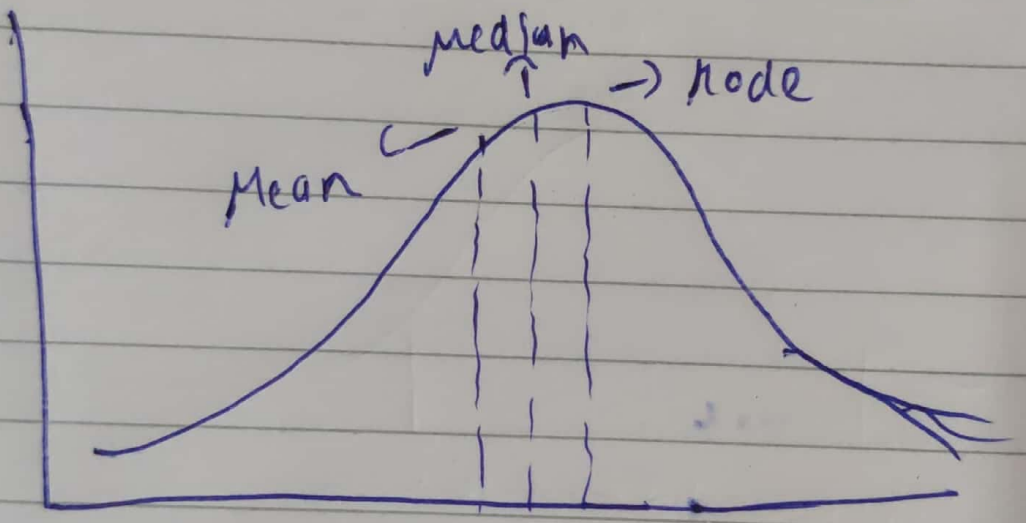
i.e 12

Ans.5



Right - Skewed distribution

Mean > Median > Mode



Left skewed distribution

Mean < Median < Mode