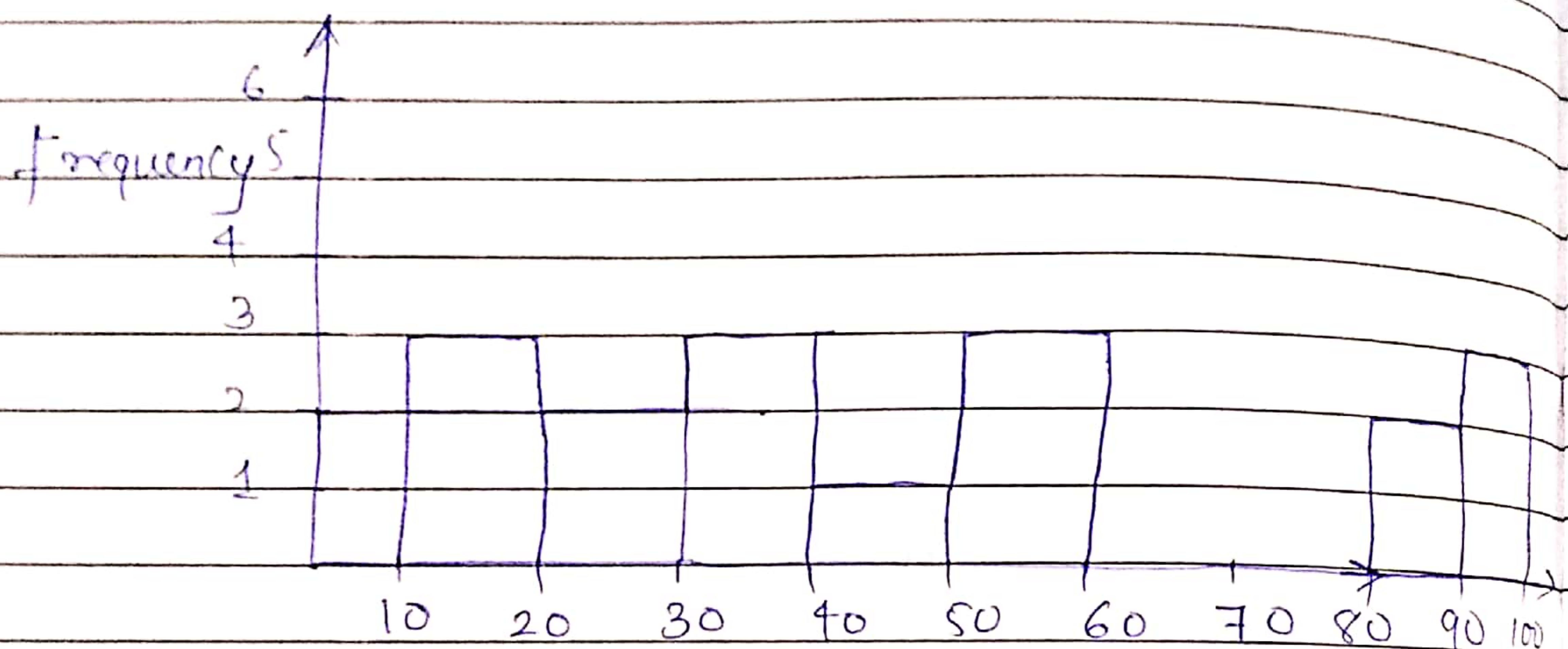


## Statistic Assignment

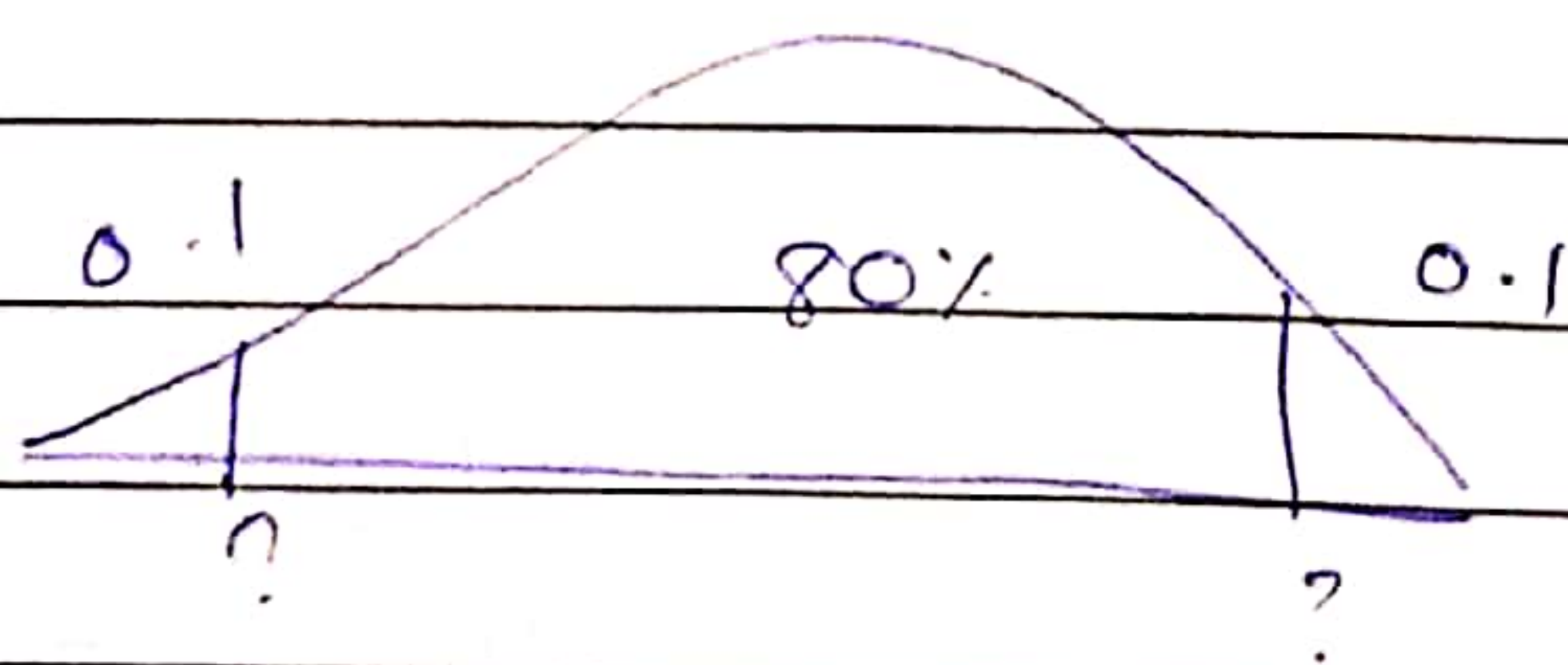
1. plot Histogram

$$n = \{ 10, 13, 18, 22, 27, 32, 38, 40, 45, 51, 56, 57, 88, 90, 92, 94, 99 \}$$



Q2  $\sigma = 100$ ,  $n = 25$ ,  $C-I = 95\%$ ,  $\bar{X} = 520$

$$\alpha = 1 - 0.8 = 0.2$$

point estimate  $\pm$  margin of error

$$520 \pm Z\left(\frac{0.2}{2}\right)\left(\frac{100}{\sqrt{25}}\right)$$

$$520 \pm Z(0.1)(20)$$

lower

$$520 - 1.28 \times 20$$

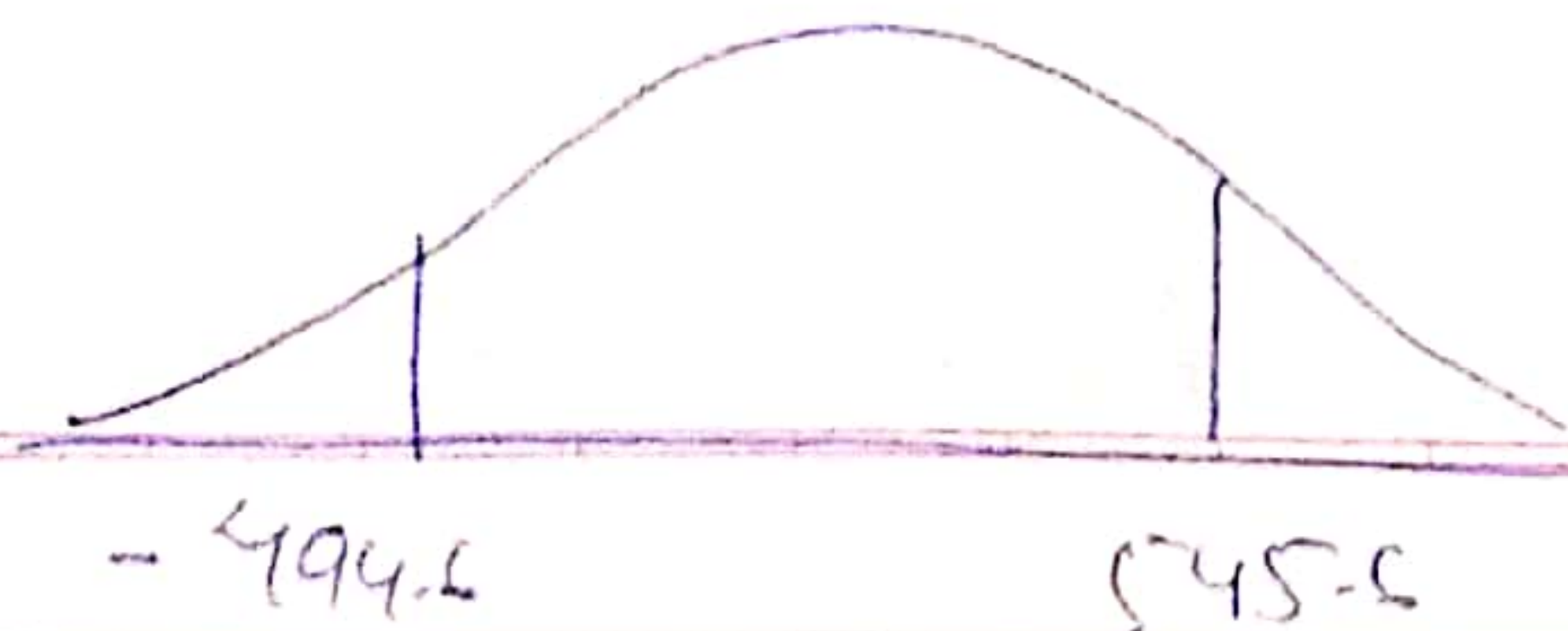
$$520 - 25.6$$

$$= 494.4$$

$$\text{Higher} = 520 + 25.6$$

$$= 545.6$$



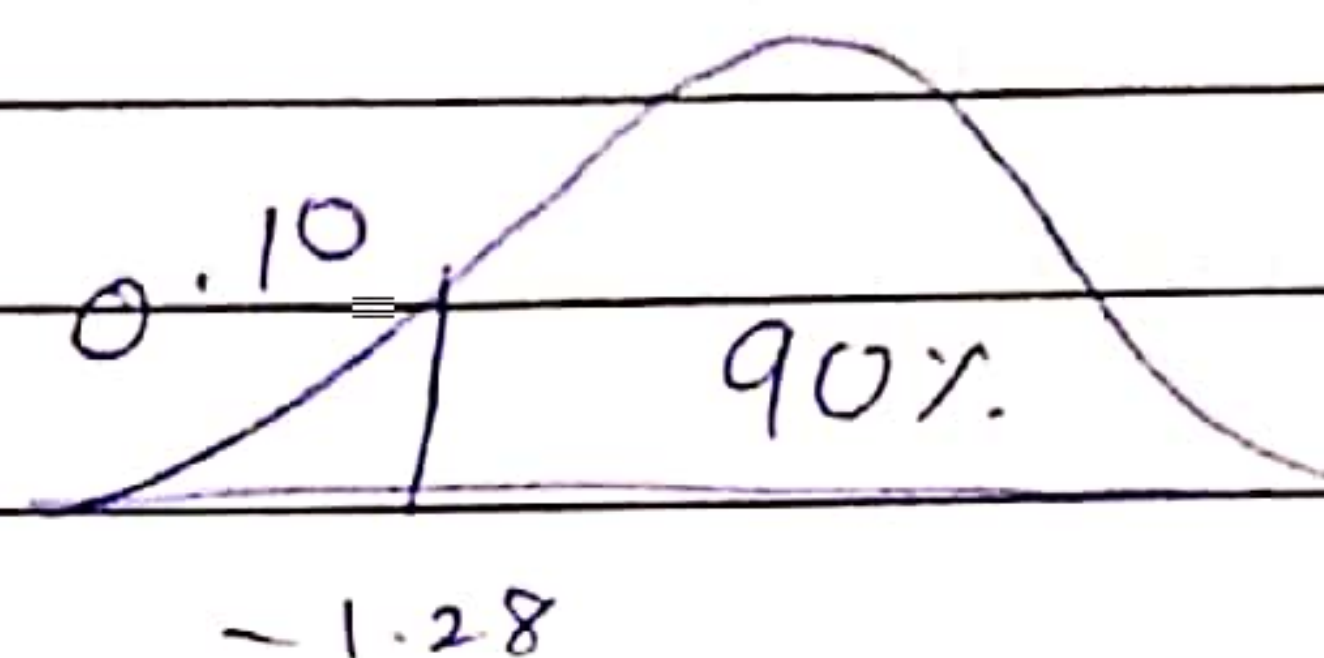


### Q3. z-test proportion

$$P_0 = 60, \quad n = 250, \quad \bar{X} = 170, \quad \alpha = 0.10$$

1.  $H_0: P_0 = 60$   
 $H_1: P_0 < 60$

One tail test



$$z\text{-test} = \frac{\hat{p} - P_0}{\sqrt{\frac{P_0 Q_0}{n}}}$$

$$\hat{p} = \frac{X}{n} = \frac{170}{250} = \underline{0.68}$$

$$Q_0 = 1 - P_0 = 1 - 0.6 = \underline{0.4}$$

$$z = \frac{0.68 - 0.6}{\sqrt{\frac{0.6 \times 0.4}{250}}} = \frac{0.68 - 0.6}{\sqrt{\frac{0.6 \times 0.4}{250}}} = \underline{\underline{-2.581}}$$

Z-value for -2.581 is 0.00494

$$P\text{ value} = 0.00494$$

$$\alpha = 0.10$$

$$P\text{ value} < \alpha\text{ value}$$

$\therefore$  reject the null hypothesis.

$\therefore$  Vehical owner in ABC city is less than 60%.



Q4.  $n = \{2, 2, 3, 4, 5, 5, 5, 6, 7, 8, 8, 8, 8, 8, 9, 9, 10, 11, 11, 12\}$

99 Percentile ?

Ans.

$$\frac{99}{100} \times (n+1)$$

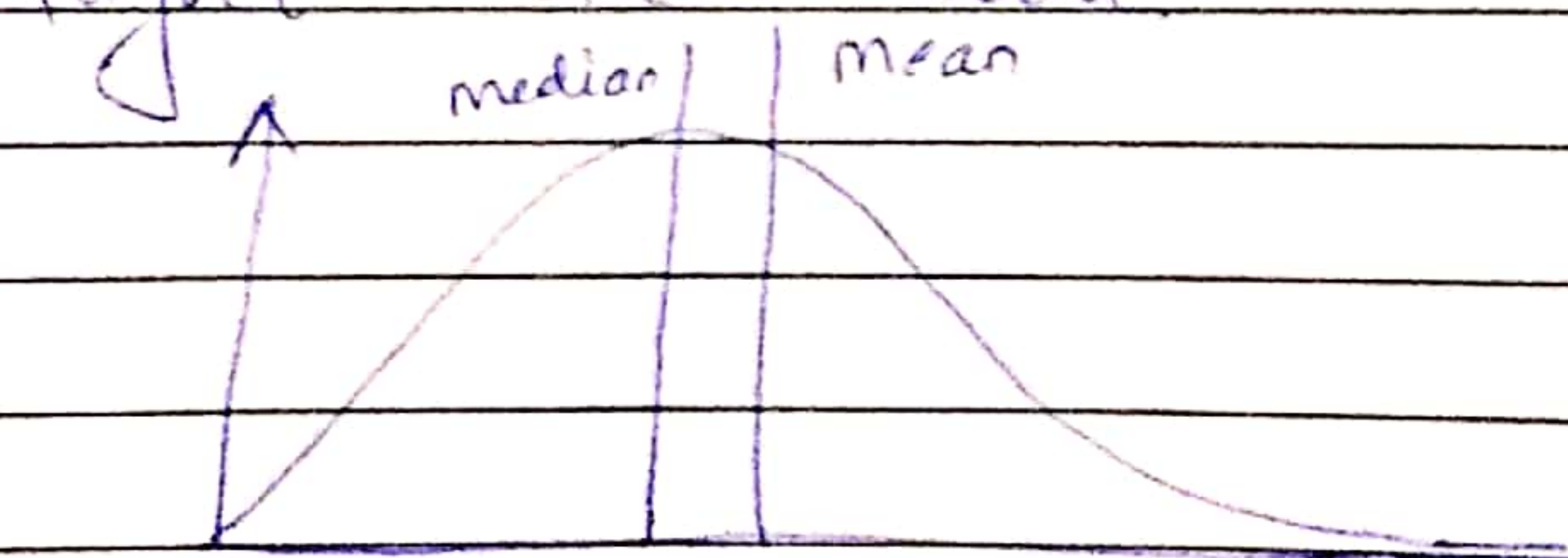
$$\frac{99}{100} \times (20+1) = \frac{99}{100} \times 21$$

$$= 20.79$$

12 is index position 20.79

Q5. Relationship between mean, median, mode

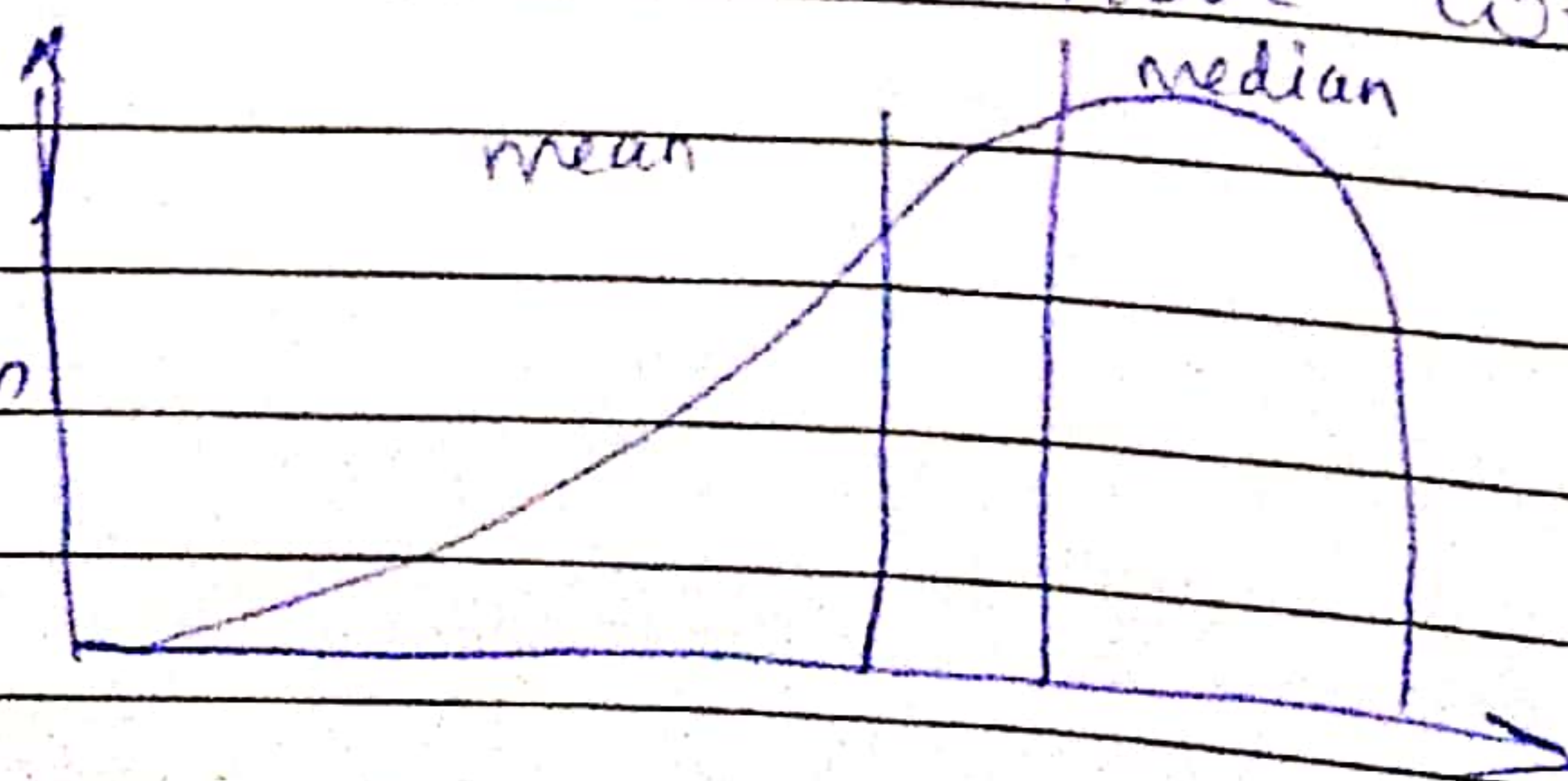
i. Right Skew data :



It is also known as Positive Skew. If tail is ending on right side called Positive Skewed.

The relationship of mean & median is mean will be towards right side of median where mode will be left side.

mean will be less than median  
mode will be greater



Left Skew  
(Negative Skew)