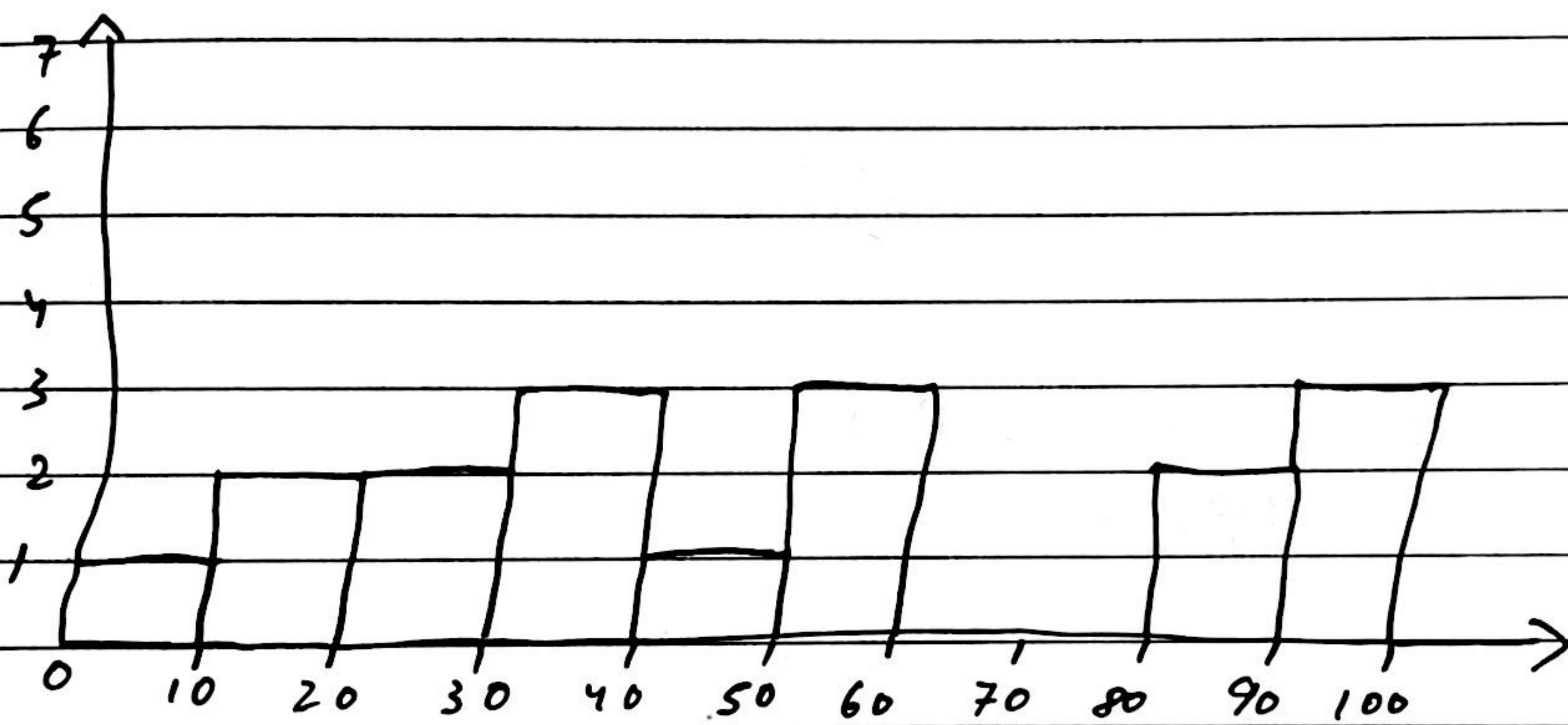


Statistics Assignment.

Ques 1 Plot a histogram

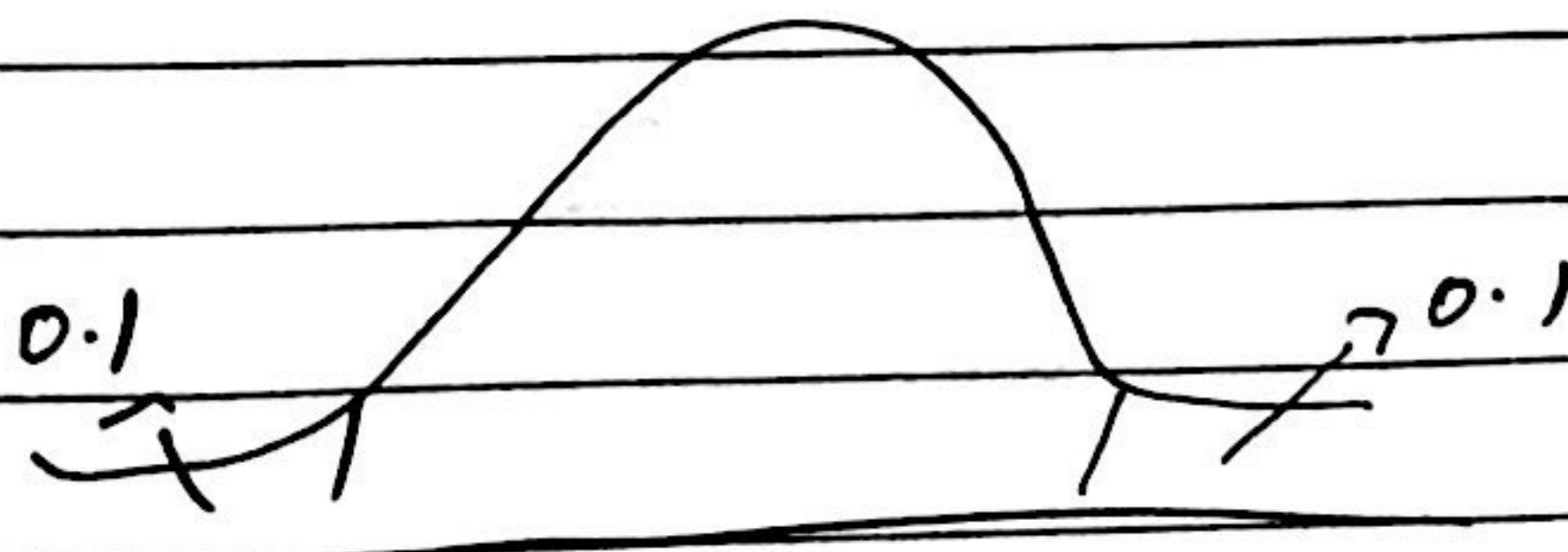
10, 13, 18, 22, 27, 32, 38, 40, 45, 51, 56, 57,
88, 90, 92, 94, 99



Ques 2. In a quant test of the CAT Exam, the population standard deviation is known to be 100. A sample of 25 tests taken has a mean of 520. Construct an 80% C.I. about mean.

→. As the population std. is given we will use z-test

$$\sigma = 100, n = 25, \bar{x} = 520, \alpha = 0.20$$



$$C.I. = \text{Point Est.} \pm \text{Margin of Error}$$

$$Z_{\alpha/2} = 1.29$$

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

$$= 520 \pm Z_{\alpha/2} \frac{100}{\sqrt{25}}$$

$$\text{Lower bound} = 520 - 1.29 \left(\frac{100}{5} \right)$$

$$= 520 - 25.8$$

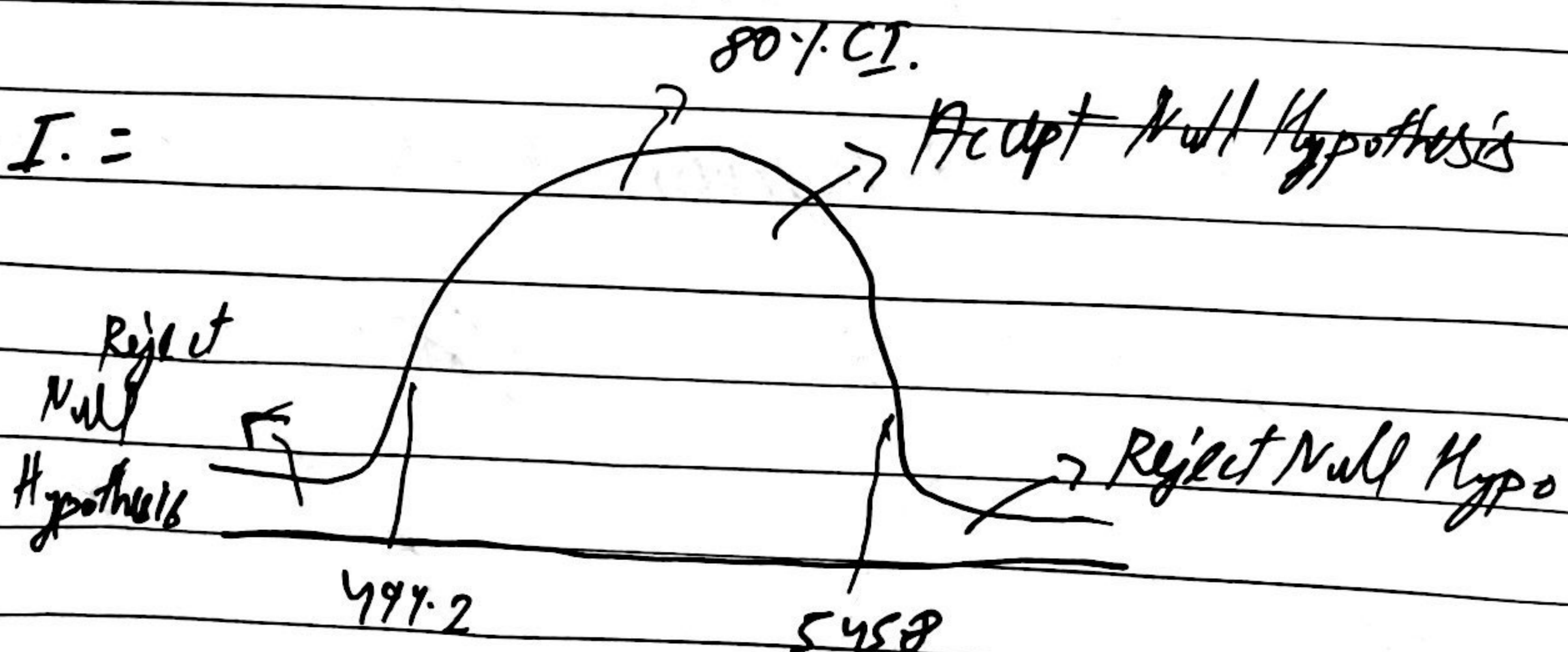
$$= 494.2$$

$$\text{Higher bound} = 520 + 1.29 \left(\frac{100}{5} \right)$$

$$= 520 + 25.8$$

$$= 545.8$$

C.I. =

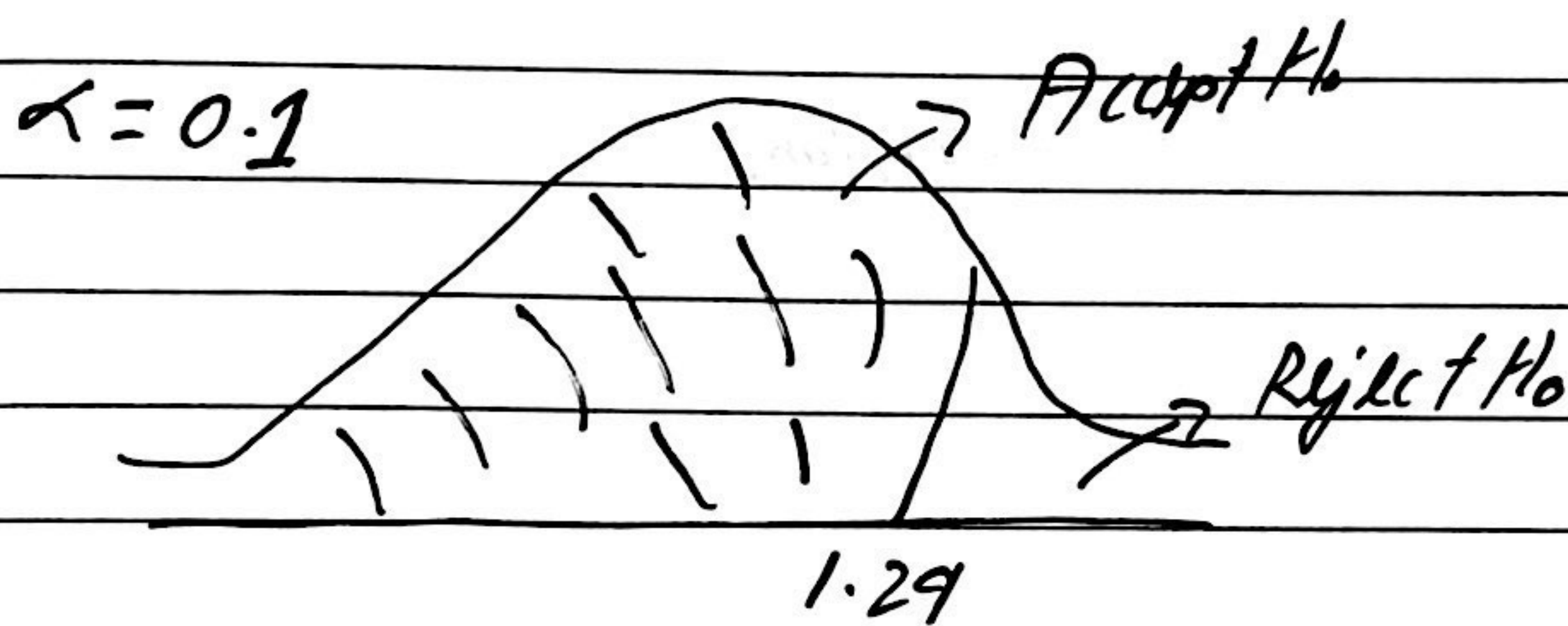


Ques 3.

a) Null Hypothesis

$$H_0 = P_0 \leq 60\%$$

$$H_1 = P_0 > 60\%$$



$$n = 250, x = 170$$

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

$$P_0 = 0.6$$

$$q_0 = 0.4$$

$$Z_{\text{test}} = \frac{\hat{p} - P_0}{\sqrt{\frac{P_0 q_0}{n}}} = \frac{0.68 - 0.6}{\sqrt{\frac{0.24}{250}}}$$

$$= \frac{0.08}{0.0309} = 2.588$$

Conclusion $\Rightarrow 2.588 > 1.29$ (Reject H_0)

There is not enough evidence to prove that vehicle ownership is 60% or less.

Ques 4. What is the value of 99 percentile.

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

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

$$= 0.99 \times 21$$

$$= 20.79 \rightarrow \text{Index Position.}$$

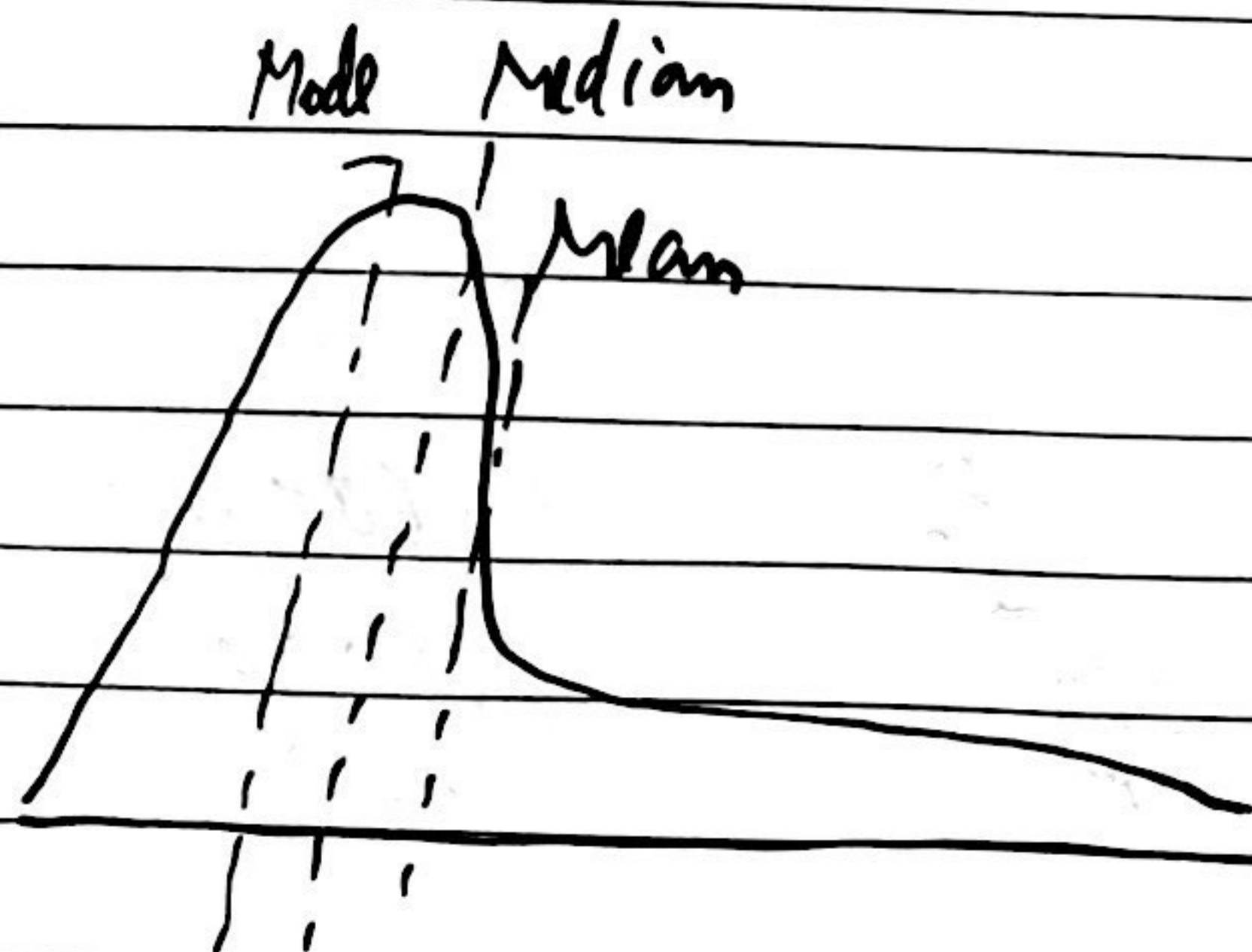
Value of 99th percentile.

$$= 12$$

Ques 5. In left & right skewed data, what is the relationship between mean, median, mode?

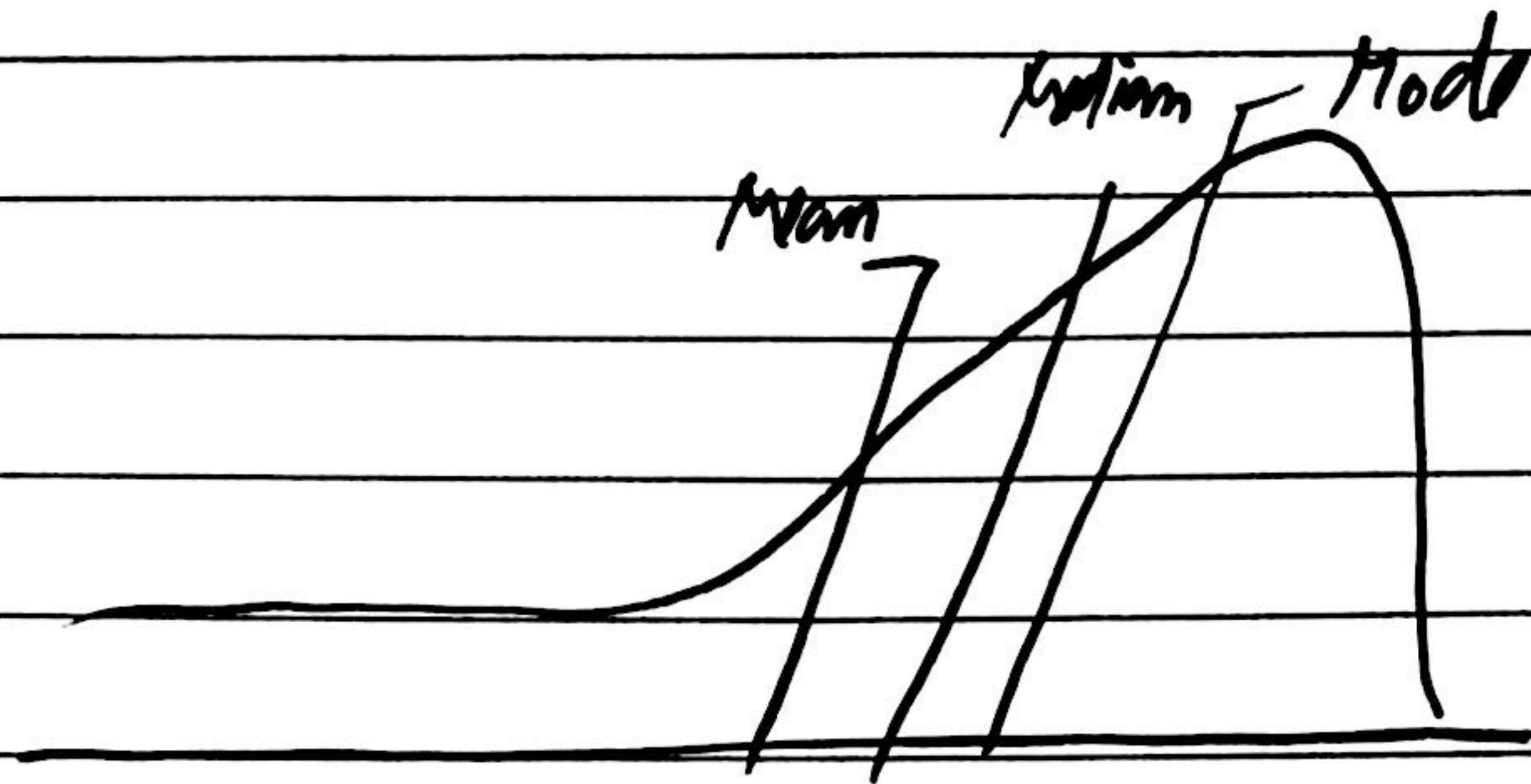
Draw graph to represent same?

→ Right skewed →



$$\text{Mean} > \text{Median} > \text{Mode}$$

Left skewed \rightarrow



$Mode > Median > Mean.$