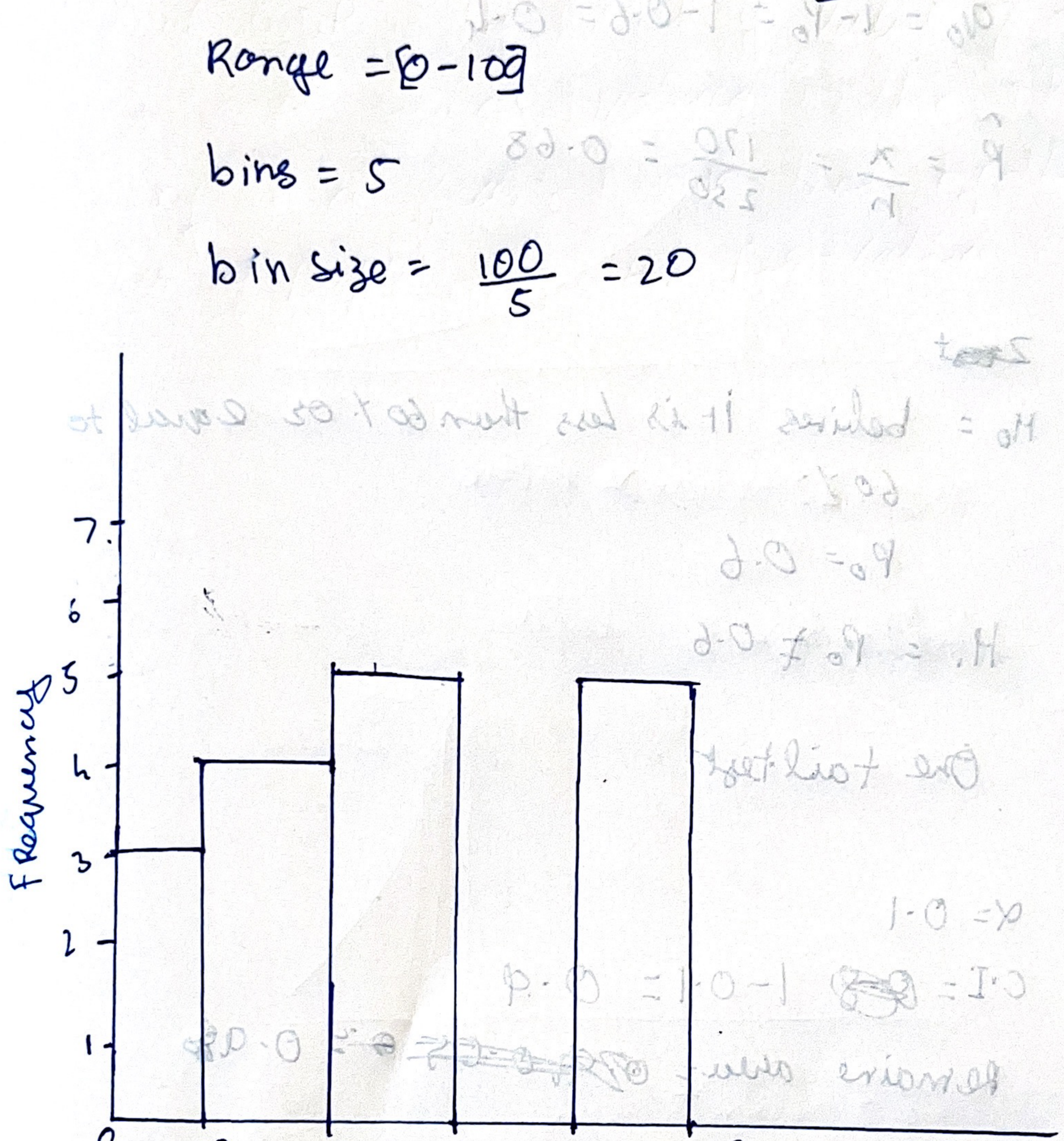
(1)

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

Ronge = [0-100]

bins = 5

bin size = $\frac{100}{5}$ = 20



bin size.

(3) $n = 250$

$x = 170$

$P_0 = 0.6$

$q_0 = 1 - P_0 = 1 - 0.6 = 0.4$

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

~~Z test~~

H_0 = believes it is Less than 60% or equal to 60%

$P_0 = 0.6$

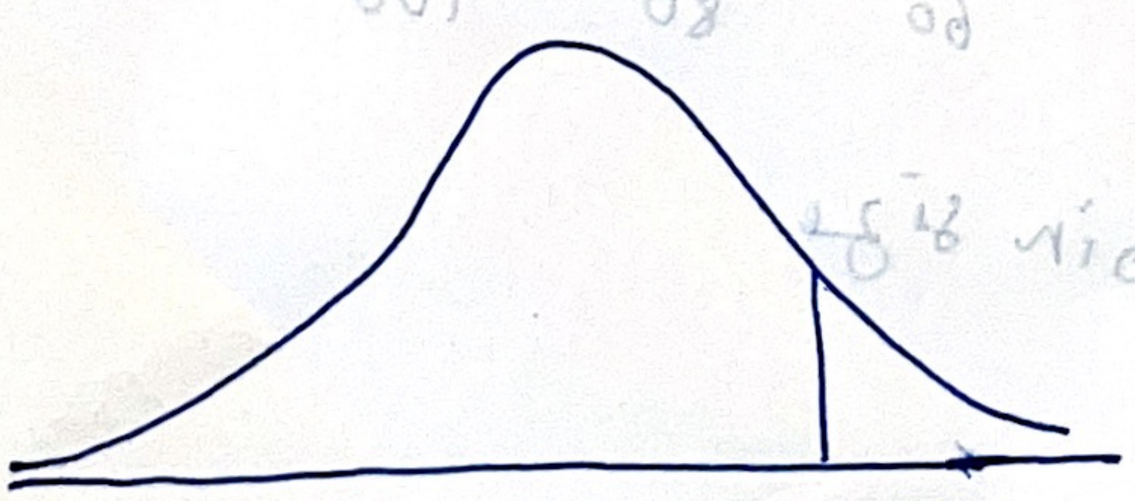
$H_1 = P_0 \neq 0.6$

One tail test

$\alpha = 0.1$

C.I = ~~0.9~~ $1 - 0.1 = 0.9$

Remaine area = ~~0.05~~ $= 0.9$



~~1.65~~

~~1.645~~

1.285

$$Z_{test} = \frac{\hat{p} - p_0}{\sqrt{\frac{q_0 p_0}{n}}}$$

$$\frac{0.68 - 0.6}{\sqrt{\frac{0.4 \times 0.6}{250}}} = \frac{0.08}{\sqrt{\frac{0.24}{250}}} = \frac{-0.08}{0.0409}$$

$$= -1.95$$

$$-1.95 < 1.285$$

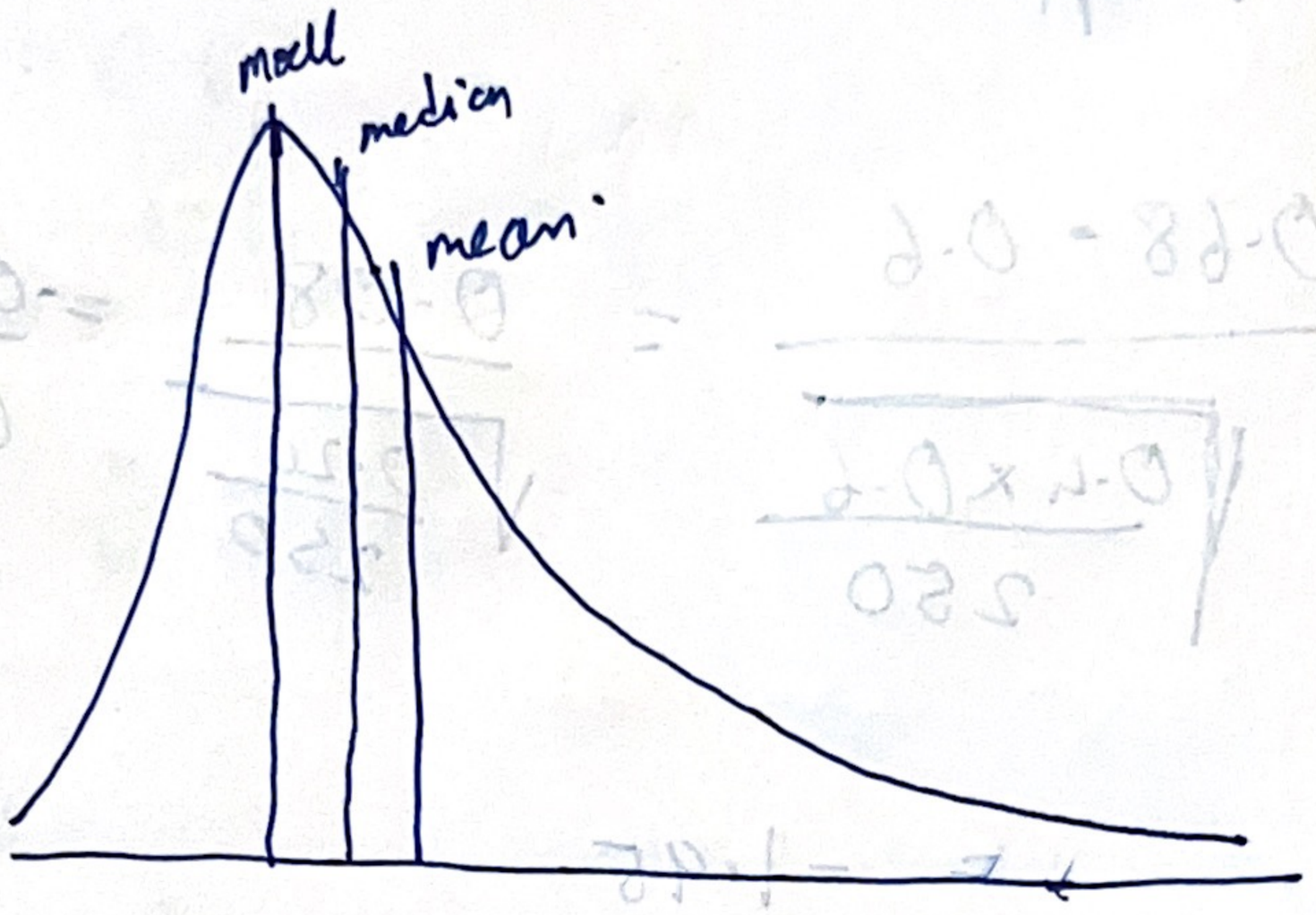
hence null hypothesis is accepted.

Sales manager is wrong.

4) $\frac{99}{100} \times 21 = 0.99 \times 21 = 20.79$

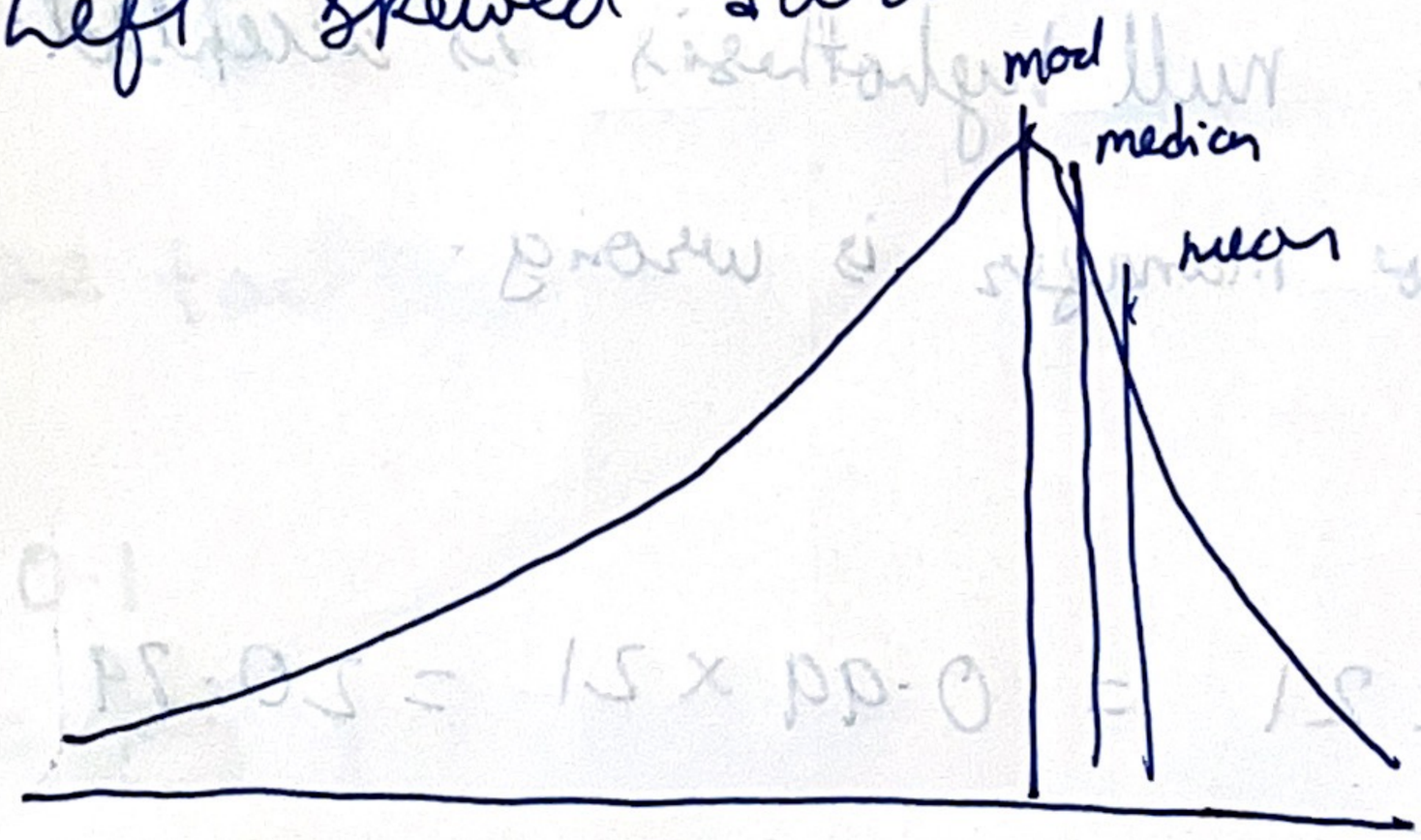
99th Percentile is 12

(5) Righ skewed data



mean > median > mode

Left skewed data



mode > median > mean

(2) C·I = 80%.

$\sigma = 100$

$n = 25$

$\bar{x} = 520$

$\alpha = 1 - C \cdot I$

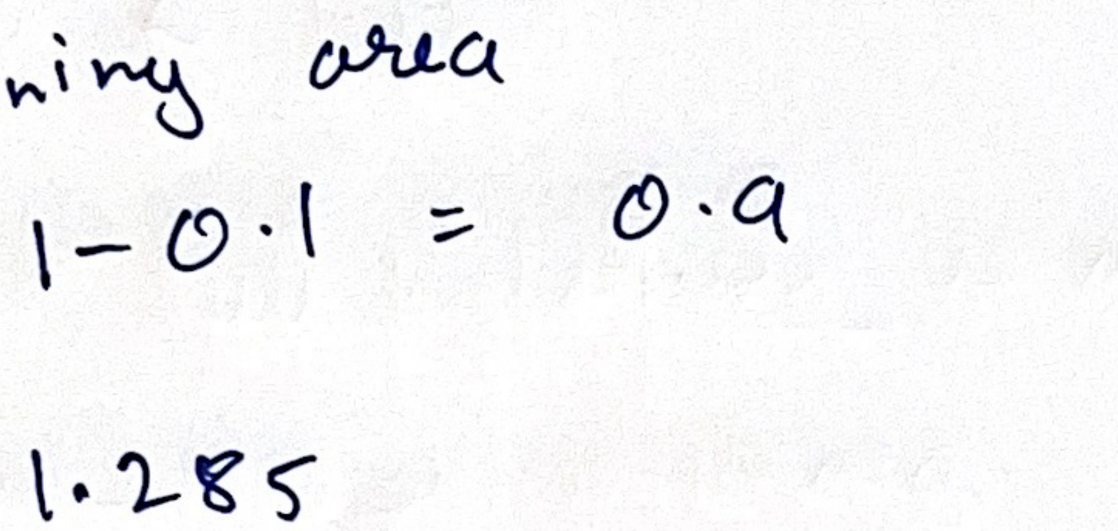
$\alpha = 0.2$

$\frac{\alpha}{2} = 0.1$

Remaining area

$= 1 - 0.1 = 0.9$

$Z_{\frac{\alpha}{2}} = 1.285$



Lower bound = $\bar{x} - Z_{\frac{\alpha}{2}} \times \left(\frac{\sigma}{\sqrt{n}}\right)$

$520 - 1.285 \times \frac{100}{\sqrt{20}}$

$520 - 25.7$

$= 494.3$

higher bound = 520 + 25.7

= 545.7

Lower bound = 494.3

higher band = 545.7