practice set 07/10/22

Ques 1

$\mu = 4300$

$\sigma = 750$

normal distribution.

$P(2500 < X < 4200) = ?$

⇓ standard form

$$Z = \frac{x - \mu}{\sigma}$$

$$Z_1 = \frac{2500 - 4300}{750}$$

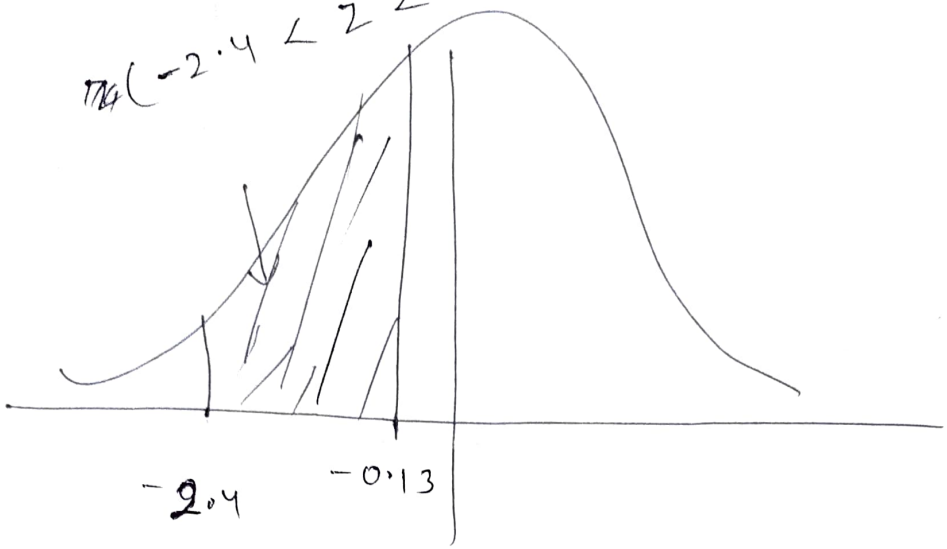
$$Z_1 = -2.4$$

$$Z_2 = \frac{4200 - 4300}{750}$$

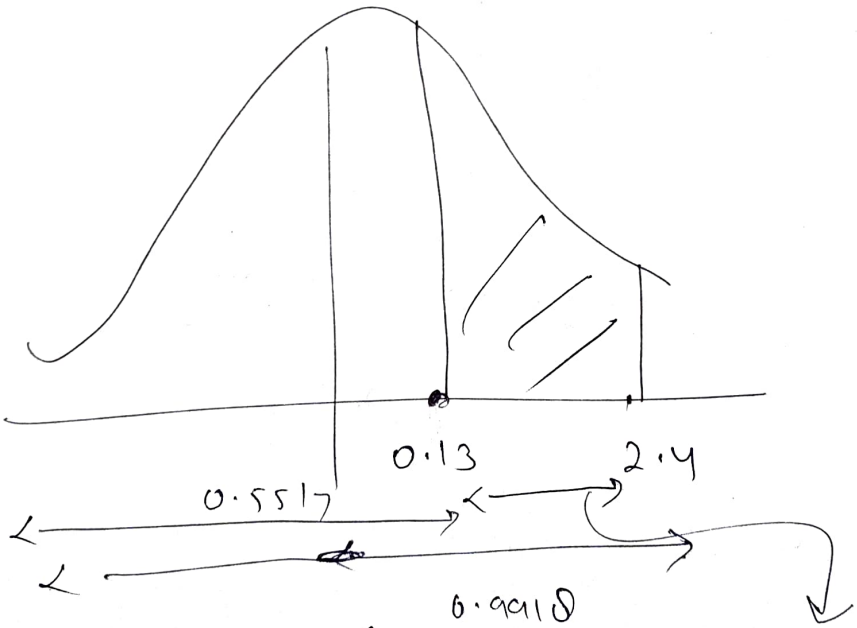
$$Z_2 = -0.13$$

$P(2500 < X < 4200) = P(-2.4 < Z < -0.13)$

$P(-2.4 < Z < -0.13)$



PE ⇓



from table $0.9918 - 0.5517$

$= 0.4401$

Ques2:-

$$P(\text{IPhones}) = 0.3$$

Geometric Distribution

$$P(X) = (1-P)^{X-1} \times P$$

$$P(X \leq 5) = (1-0.3)^{4} \times 0.3$$

$$= 0.7^{4} \times 0.3$$

$$= 0.072$$

$P(X=4) =$

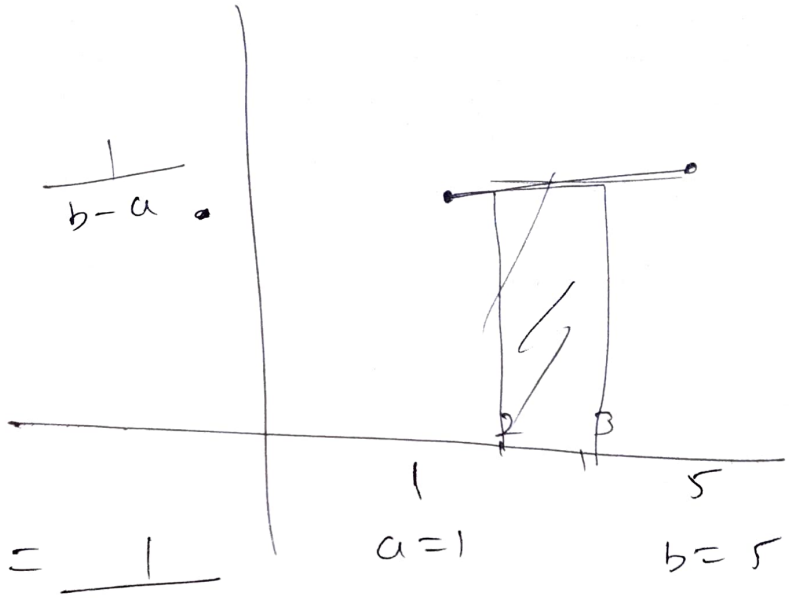
$P(X=3) =$

$P(X=2) =$

$P(X=1) =$

$P(X \leq r) = P(1) + P(2) + \cdots P(r)$

Ques 3 :-



$$f(x) = \frac{1}{b-a} \qquad a=1 \qquad b=5$$

$$P = \frac{3-2}{5-1} = 1/4$$

Ques 4 :-

$$f(x) = 3x^2$$

(a) $P(X \geq 0.45)$

$$= \int_{0.45}^{1} 3x^2 \, dx$$

(b) $P(X \leq a) = P(X > a)$

$$\int_{0}^{a} 3x^2 \, dx = \int_{a}^{1} 3x^2 \, dx$$

(c) $P(X > b) = 0.35$

$$\int_{b}^{1} 3x^2 \, dx = 0.35$$

Ques 5 :-

$\mu = 40 \quad min$

$x = 50 \quad min$

$\lambda = 1/40$

exponential dis

~~$P(x) =$~~

$P(X \leq x) = 1 - e^{-\lambda x}$

$= 1 - e^{-\frac{1}{40} \times 50}$

$= 1 - e^{-1.25}$

$= 0.7135$

Ques 6:- exponential

$$P(4 < x < 5) =$$

$$P(x \leq 5) = 1 - e^{-\lambda \times 5}$$

$$P(x < 4) = 1 - e^{-\lambda \times 4}$$

$$P(4 < x < 5) = P(x < 5) - P(x < 4)$$

$$=$$