No.:

Date: 12/10/22

## Tutorial No. 3 Probability Distribution

1) The probability density function of a random variable & zero except at 2=0,1,2.

At these points. p(0)= 3c3, p(1=4c-10c2, p(2)=5c-1

$$f(x) = \begin{cases} 0 & x \in I - [0,2] \\ 3c^{3} & x = 0 \end{cases}$$

$$4c - 10c^{2} \times 2c^{2}$$

$$5c - 1 \quad x = 2$$

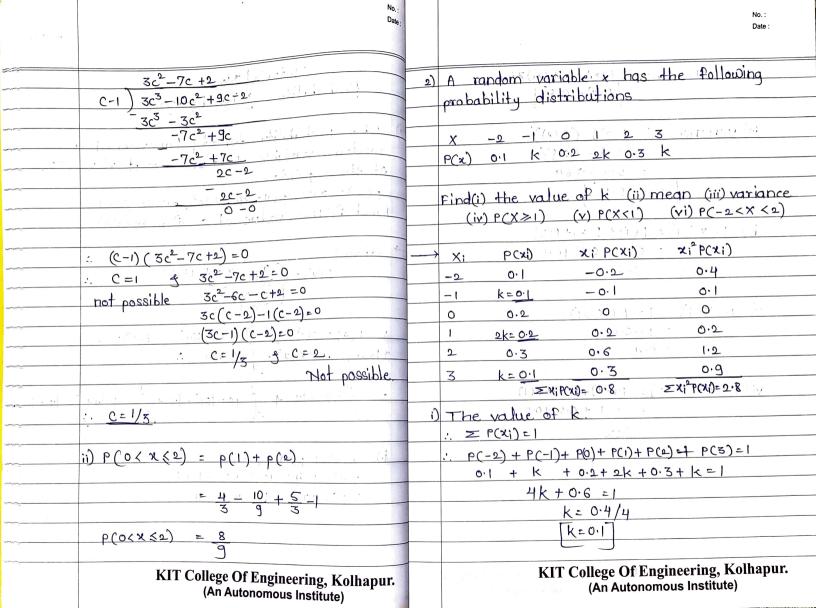
$$P(0) = 3c^{3} P(1) = 4c - 10c^{2} P(2) = 5c - 1$$

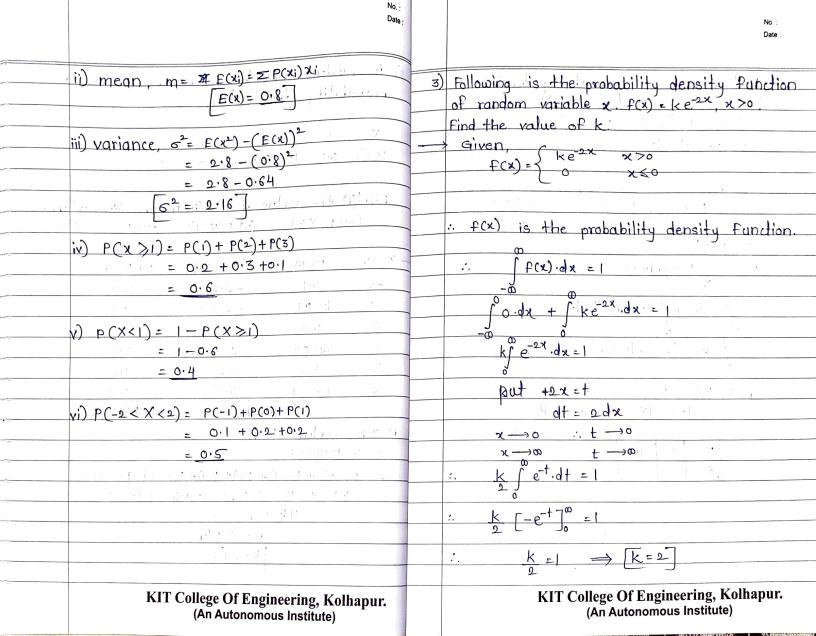
How, 
$$P(x \le x) = \int_{0}^{\infty} P(x) \cdot dx$$

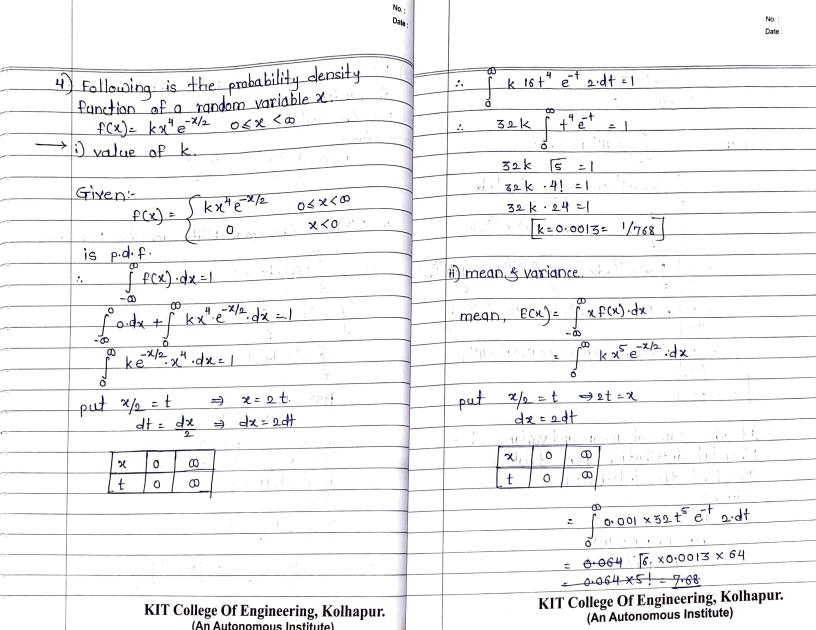
$$\int_{-\infty}^{\infty} 3c^{3} dx + \int_{-\infty}^{\infty} 4c - 10c^{2} dx + \int_{-\infty}^{\infty} 5c - 1 dx + \int_{-\infty}^{\infty} 0 dx = 1$$

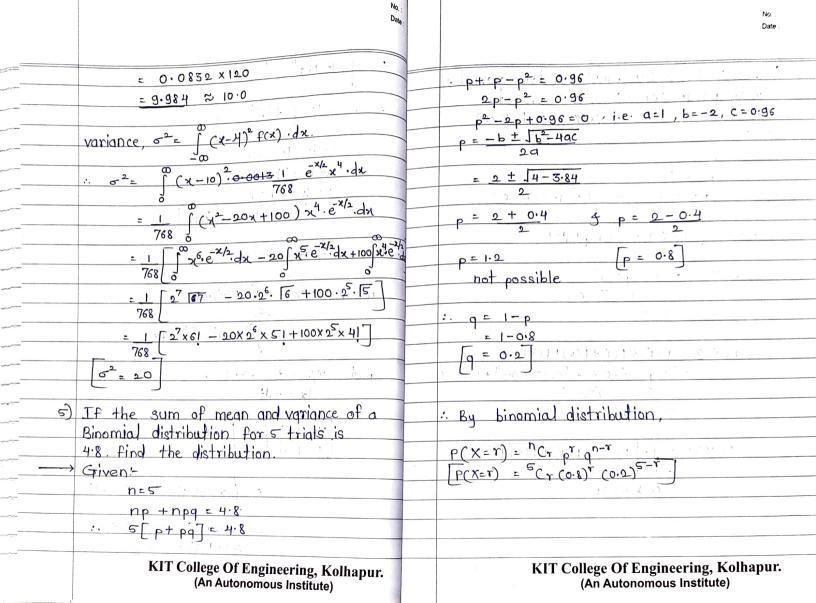
i) 
$$p(0) + p(1) + p(2) = 1$$
  
 $3c^{3} + 4c - 10c^{2} + 5c - 1 = 1$   
 $3c^{2} - 10c^{2} + 9c - 2 = 0$ 

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6) Let X be a binomial random variable with parameter 
$$05 \ 3 \ 0.7 \ \text{compute}$$
i)  $P(X = 2) \ 2) P(X < 3) \ 5) P(X > 2)$ 

Fiven:

$$n = 5$$

$$p = 0.7$$

$$q = 1 - p = 1 - 0.7 = 1 - 0.7 = 0.3$$

$$Now, P(X = r) = {}^{n}(r \ p^{T}q^{n-T})$$
i)  $P(X = 2) = {}^{5}C_{2} \ p^{2}q^{3}$ 

$$= {}^{5}C_{2}(0.7)^{2}(0.3)^{3}$$

$$= {}^{5}C_{1}(0.7)^{2}(0.3)^{3}$$

$$= {}^{5}C_{2}(0.7)^{2}(0.3)^{3}$$

$$= {$$

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