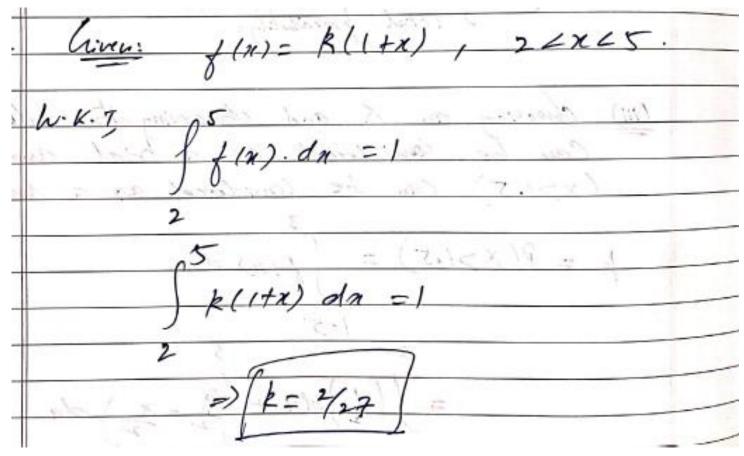
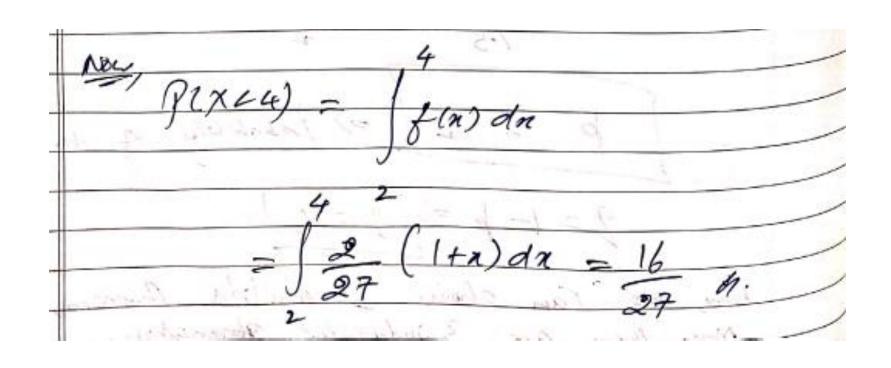
Problem 4: A continuous random variable X that can assume any value between x = 2 and x = 5 has a density function given by f(x) = k(1 + x). Find P(X < 4).

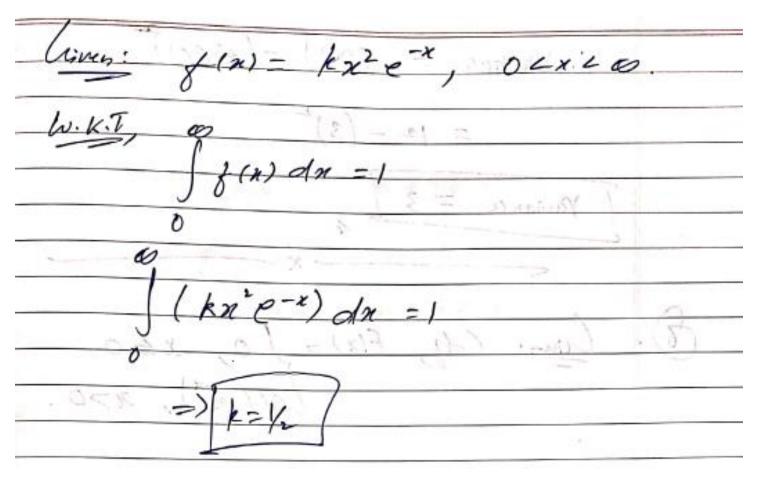
Solution:

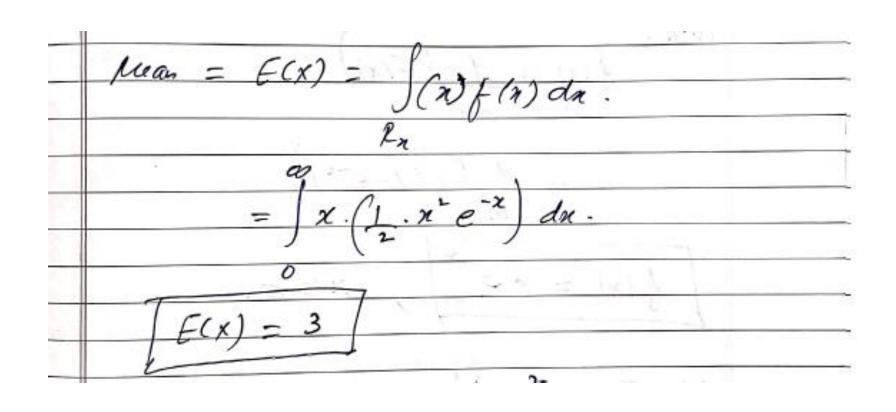




Problem 5: A continuous random variable X has a pdf $f(x) = kx^2e^{-x}$, $0 < x < \infty$. Find k, mean and variance.

Solution:





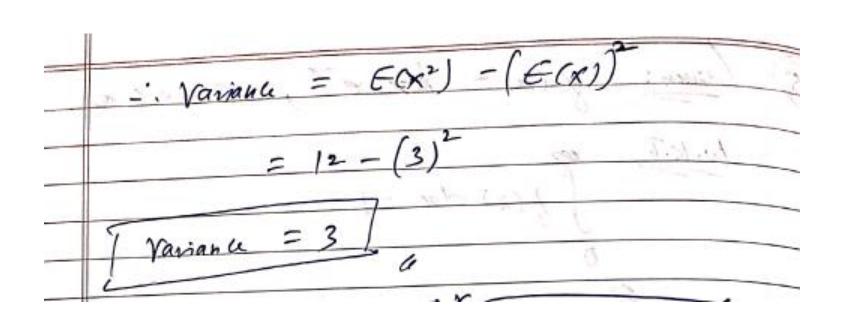
Variance,
$$= E(x^2) - (E(x))$$

$$= \int_{0}^{\infty} (x^2) dx$$

$$= \int_{0}^{\infty} (x^2) dx$$

$$= \int_{0}^{\infty} (x^2) dx$$

$$= \int_{0}^{\infty} (x^2) dx$$

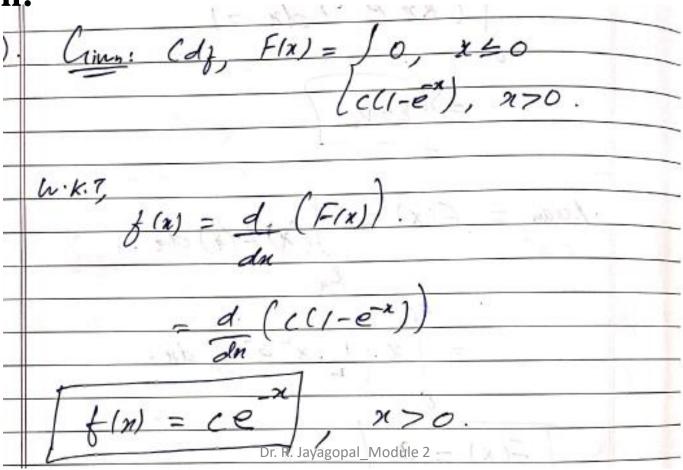


Problem 6: If a random variable X has a cumulative distribution function say

$$F(x) = \begin{cases} 0, & x \le 0 \\ c(1 - e^{-x}), & x > 0 \end{cases}$$

Find the p.d.f. f(x) value 'c' and P(1 < X < 2)

Solution:



$$(i) \quad To \quad find \quad C'$$

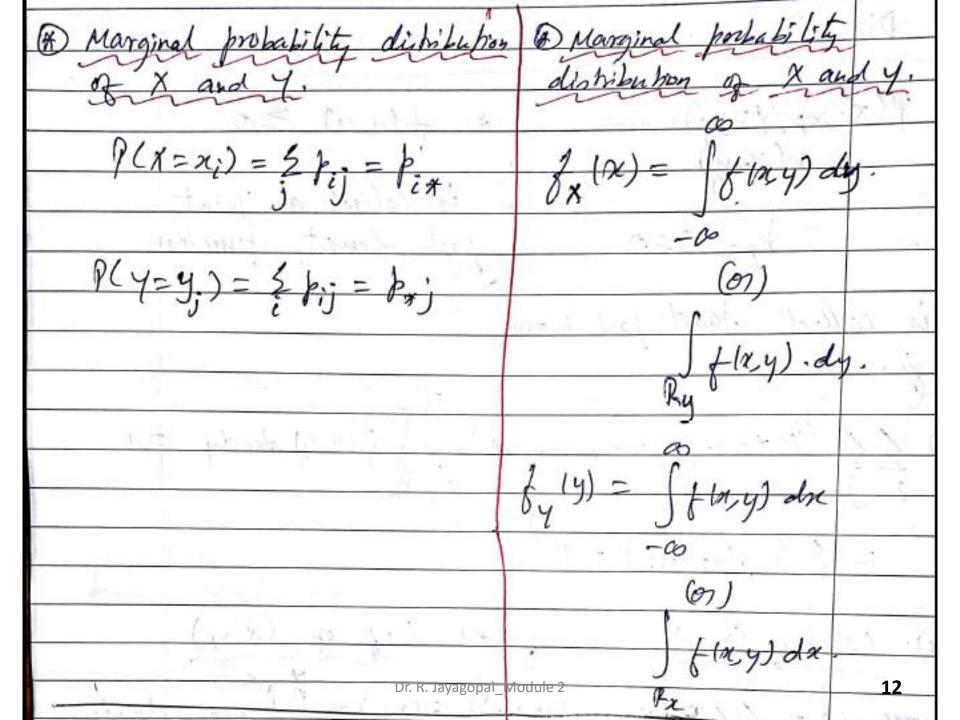
$$= w \cdot k \cdot \overline{i}. \quad \begin{cases} (c \cdot e^{-x}) \\ (c \cdot e$$

2D - Random variables

2D - Random variables

| Dincrete | Continuous. |
|----------------------------|-----------------------|
| #) P(x=x; Y=y;) | B) f(u,y) 20. |
| = p(264) | 0 - 1 7 5 (1 - 1) 1. |
| = po >0 | jost dousty junction. |
| | |
| junction. Joint pool man | |
| *) 55 (7(x=xi, y=yi)). | a) I flary) decdy =1. |
| #) 22 (1C) - (i) (-) j/). | Ry Px |
| = 2 2 plaz, yz) =1 | |
| | opal_Module 2 |

Not: Notes



| Conditional probability | Denditional probability |
|--|-------------------------|
| $P(x=x_i/Y=y_i)$ | assisbution: |
| = P(x=xi, y=y;) P(y=yi) | f (2/y) = f (2,y) |
| = þij. | |
| To so the sound of | |

