**Assignment -1**

Q1. A town has two fire engines operating independently. The probability that a specific engine is available when needed is 0.96. Compute the probability that neither is available when needed.

Q2. Consider the density function

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Evaluate k. Also Find the Cumulative distribution function F(x)

Q3. The random variable X and Y have the following probability distribution

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| f(x,y) | | x | | |
| y |  | 1 | 2 | 3 |
| 1 | 0.05 | 0.05 | 0.10 |
| 2 | 0.05 | 0.10 | 0.35 |
| 3 | 0.00 | 0.20 | 0.10 |

Evaluate the marginal distribution of X and Y

Q4. Let X be a random variable with density function . Find the expected value of .

Q5. In a certain assembly plant, three machines, *B*1, *B*2, and *B*3, make 30%, 45%, and 25%, respectively, of the products. It is known from past experience that 2%, 3%, and 2% of the products made by each machine, respectively, are defective. Now, suppose that a finished product is randomly selected. What is the probability that it is defective?