1.The probability that a regularly scheduled flight departs on time is *P*(*D*) = 0*.*83; the probability that it arrives on time is *P*(*A*) = 0*.*82; and the probability that it departs and arrives on time is *P*(*D ∩A*) = 0*.*78. Find the probability that a plane arrives on time, given that it departed on time.

2.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?

3.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.

4.Determine the value ***c***so that the following function can serve as a probability distribution of the discrete random variable *X*:



5.With reference to 2(b), calculate the probability 

6.Consider the density function

Evaluate **k.**

7.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

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

9. The probability that a patient recovers from a delicate heart operation is 0.9. Compute the probability that exactly 5 of the next 7 patients having this operation survive

10. A random variable X has a mean µ = 8 and variance σ2 = 9. Using Chebyshev’s theorem, find P (-4 < x < 20).