**Practice Problems (Set 1)**

[1] The PMF of a discrete random variables X is

Find (a) value of c, (b) PMF of Y=(2X2-3X-7), and (c) variance of X.

[2] The PMF of a discrete random variables X when X>=0 is

and when X<0

If P[X<0]=0.4, find the (a) values of c1 and c2, (b) P[X2<6], and (c) mean of X.

[3] The number of products manufactured by a company on any day is Binomial (20,0.8). Each product is sold for $100. If the total expenditure of the company on a single day is $300, find the (a) expected profit, and (b) probability that the company runs at a loss on a day.

[4] X is a discrete uniform random variable. It is known that the mean of X is zero and the standard deviation of X is 2. Find P[X>1].

[5] The CDF of the random variable X is

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Find the

(i) P[0.5<X<1.5], and (ii) mean of X

[6] A driver starts from point A and reaches point B either along path I or path II. It is known that the number of red lights, N, that he will find along path I is Binomial (3, 0.5) while that along path II is discrete uniform (1, 4) . If the driver randomly selects a path, find the

(a) probability that he finds less than 3 red lights on his way, and

(b) mean and variance of the number of red lights on his way.

[7] X is a Gaussian random variable with mean 3 and standard deviation 2. Find

(i) P[X2>2X] (8 pts), and (ii) expected value of [2X2-3X-5].

[8] X is a uniformly distributed continuous random variable. If the mean and the variance of X are 5 and respectively, find P[X>4].

[9] If X is uniform from -1 to +3, find the probability density function of (i) Y=(5-4X) (5 pts), and (ii) Y=.

[10] The probability density function of a continuous random variable X is

Find (i) the value of c (8 pts), (ii) variance of X, and (iii) mean of X when X>0 .