**Assignment II (CS/IT)**

1. Let X1, X2 and X3 be uncorrelated random variables having the same standard deviation. Find the correlation coefficient between X1 + X2 and X2 + X3.
2. Suppose that X is uniformly distributed over (– a, a) where a > 0. Whenever possible determine ‘a’ such that



1. Suppose that joint pdf of the two dimensional r. v. (X, Y) is given by



compute (i)  (ii) 

1. With usual notation show that

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1. The amount of kerosene, in thousands of liters in a tank at the beginning of any day is a random amount Y from which a random amount X is sold during the day. Suppose that the tank is not resupplied during the day so that , and assume that the joint density function of these variables is



1. Determine if X and Y are independent
2. Find .
3. Suppose that the two – dimensional random variable (X, Y) have joint pdf

 Compute the correlation coefficient between X and Y.

1. A two dimensional random variable (X,Y) is uniformly distributed in the region bounded by a circle x2 + y2 = a2 . Find the correlation coefficient between X and Y.
2. A two dimensional random variable (X,Y) has the joint density function

. Find

1. Marginal and conditional p.d.f.
2. Are they independent?
3. Two independent random variables have mean (5,10) and variance (4,9) respectively. Find covariance between and
4. Find the correlation coefficient between X and Y, if X and Y is a two dimensional random variable with joint p.d.f . Also find