**KFUPM**-EE DEPT.

EE570- Stochastic Processes

**Dr. Ali Muqaibel**

Assignment # 3 Due:

**Multiple Random Variables and Operations on Them**

Version 2.0 revised

1. The joint density functions of two random variables and is

Find and plot the marginal distribution of and *Y*.

1. Given the joint distribution function
2. Find the conditional density functions and .
3. Are the random variables and statistically independent?
4. Find
5. Two random variables X and Y have means and , variances and =1, and the correlation coefficient .The new random variables W and V are defined by

Find

1. The means
2. The variances
3. The correlation and
4. The correlation coefficient of and .
5. and are uniformly distributed on the triangular region.
   1. Find the pdf of Z=X+Y.
   2. Verify your solution by finding the pdf for Z using Matlab simulation. i.e. generate the random variables X and Y and add them and then get their pdf. Plot the estimated surface pdf. Discuss the impact of number of points on the accuracy of your estimation. =100, 1000, 10000.

In order to learn random variables and processes

"Take chances, make mistakes, get messy!" **in the HW assignment!**

Good luck , **Dr. Ali H. Muqaibel**