Institute INAOE

Ms course

Digital Communications

Homework 3: Two random variables

1. The random variable X is uniform in the interval [-pi,pi]

Y=cosX, Z=sinX

1. Find if the variables Z and Y are correlated.
2. The joint density of the variables X1 and X2 is known.. Find the density of the random variable Y=X1+2sinX2.
3. The random variables X1 and X2 are independent and uniform in the intervals [-1,4] and [2,5], respectively.

a. Find graphically density function of the variable X=X1+X2.

b. Find mean value and variance of the variable X.