MAT 271E Probability&Statistics Midterm II – 100 minutes

Do all problems. Show your work for credit. Write your name on all submitted sheets.

1. The joint density of random variables  and  is 
2. Determine the constant . (5 pts)
3. Determine (5 pts)
4. Determine whether  and  are independent or not. (5 pts)
5. Determine  (5 pts)
6. Let the density of random variable  be given as .
7. Determine  (10 pts)
8. Determine  (5 pts)
9. Determine  (10 pts)
10. Determine if . (13 pts)
11. Random variable  represents the heights of 12 year old persons in a country. If the person is a male, then it is distributed as a Normal r.v. with expected value of 1.55m and standard deviation of 0.06m. If the person is a female, then it is distributed as a Normal r.v. with expected value of 1.45m and standard deviation of 0.05m. Write down the mixture density for assuming that there are just as many male 12 year olds in the country as there are female 12 year olds. (12 pts)
12. Assume that the random variables  and are discrete random variables with a joint density of



1. Determine the correlation coefficient between the two random variables by first identifying the joint probability mass function. Are the two random variables linearly dependent? Are they statistically dependent? (20 pts)
2. Determine  (10 pts)