MATH 3420 HOMEWORK #1 Name:

Due Tuesday, Jan 15

Solve the following problems and staple your solutions to this cover sheet.

1. Exercise 5.3

2. Exercise 5.4

3. Exercise 5.7

4. Exercise 5.9

5. Exercise 5.15

6. Exercise 5.16

7. Exercise 5.21

8. Exercise 5.24 Hint: See problem 10 and class notes.

9. Let $f(y_1, y_2) = 2e^{-y_1-y_2}$, $0 \leq y_1 \leq y_2 < \infty$, be the joint probability density function of Y_1 and Y_2. Find $f_1(y_1)$, $f_2(y_2)$. Are Y_1 and Y_2 independent?

10. Assume random variable X is uniformly distribution over the interval $[0, 5]$. Suppose the conditional distribution of random vaiable Y, given $X = x$, is uniform over the interval $[0, x]$. Find the joint probability density function of X and Y, $f(x, y)$. Find the marginal probability function of Y, $f_2(y)$. Hint: See class notes.