

MA381 Introduction to Probability, HW 12

Instructions: This homework will be collected at the beginning of class Monday, Feb 1. Some problems will be graded in depth; remaining problems will be awarded completion credit. Late HW's are not accepted.

0: Be sure to read chapter 8, section 8.2 and 8.3.

1: Let continuous RV's X, Y have joint CDF

$$F_{X,Y}(x, y) = \begin{cases} 0, & x < 0 \text{ or } y < 0 \text{ or both} \\ x^2y^2, & 0 \leq x, y \leq 1 \\ x^2, & 0 \leq x \leq 1, y > 1 \\ y^2, & 0 \leq y \leq 1, x > 1 \\ 1, & x, y > 1 \end{cases}$$

i. Determine the marginal CDF's F_X and F_Y .

ii. Determine the joint density function $f_{X,Y}$

iii. Determine the marginal densities f_X and f_Y .

iv. Are X and Y independent?

2: Do problem 2, page 339.

3: Do problem 9, page 340.

4: Do problem 12, pg. 340.

5: Do problem 1, pg. 353.

6: Do problem 2, pg. 354.

7: Do problem 7, pg. 354.