

ECONOMICS 6331 – Probability and Statistics, Fall 2004

Homework 4. Wednesday October 13. Due Monday October 18.

1. Let the joint probability function for X and Y be defined by

$$f(x, y) = \frac{x + y}{32}, \quad x = 1, 2; \quad y = 1, 2, 3, 4.$$

Find

- a) $f_X(x)$, the marginal probability function for X .
- b) $f_Y(y)$, the marginal probability function for Y .
- c) $P(X < Y)$.
- d) $P(Y = 3X)$.
- e) $P(X + Y = 4)$.
- f) $P(X \leq 4 - Y)$.
- g) Are X and Y independent or dependent?

2. Let $f(x, y) = (3/16)xy^2$; $0 < x < 2$, $0 < y < 2$, be the joint density function for X and Y . Find the marginal density functions $f_X(x)$ and $f_Y(y)$. Are the two random variables independent?