MATH 302 WORKSHEET 5 ½ SPRING 2012

If something does not exist write DNE and explain why it does not exist.

1. Let X, Y be jointly distributed such that the joint probability mass function, $k_{xy}((x, y))$ is defined as:

$$k_{xy}((x, y)) = \begin{cases} \frac{x+y}{21} & x \in \mathbb{N}_3 \quad y \in \mathbb{N}_2 \\ 0 & \text{else} \end{cases}$$

A. Find the expected value of X given Y = ½
B. Find the expected value of X given Y = 2
C. Find the variance of X given Y = 2

2. Let X, Y be jointly distributed such that the joint probability density function, $f_{xy}((x, y))$ is defined as:

$$f_{xy}((x, y)) = \begin{cases} 12xy(1-y) & 0 < x < 1 \quad 0 < y < 1 \\ 0 & \text{else} \end{cases}$$

A. Find the expected value of X given Y = ½
B. Find the variance of X given Y = ½

3. Let X, Y be jointly distributed such that the joint probability mass function, $k_{xy}((x, y))$ is defined as:

$$k_{xy}((x, y)) = \begin{cases} \frac{x+y}{21} & x \in \mathbb{N}_3 \quad y \in \mathbb{N}_2 \\ 0 & \text{else} \end{cases}$$

A. Find the pmf for W = X + Y.
B. Find the pmf for M = X – Y.
C. Find the pmf for K = 3X – 2Y.
D. Find E[W].and Var[W]
E. Find E[M].
F. Find E[K].