

Name _____ Surname _____ Student ID. _____

DUE DATE : Tuesday 1st, September 2015.

Assignment 1

1. Let X and Y have the joint probability density function specified in the following table.

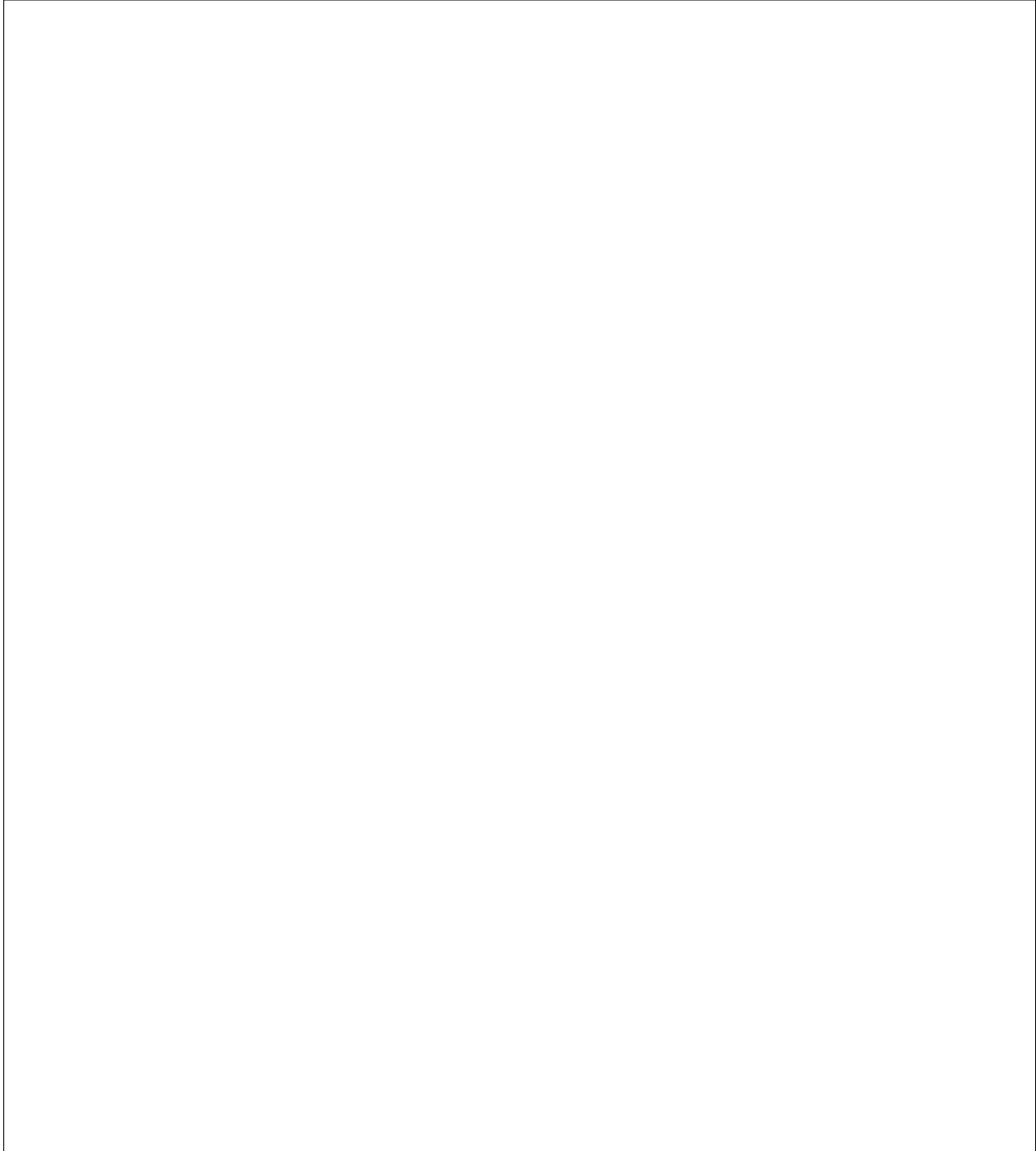
		X			
		0	1	2	
Y	0	0	0.20	0.10	$f(Y = 0)$ =
	1	0.20	0.40	0	$f(Y = 1)$ =
	2	0.10	0	0	$f(Y = 2)$ =
		$f(X = 0)$ =	$f(X = 1)$ =	$f(X = 2)$ =	

[1]. Find $E(Y^2|X = 1)$ and $var(Y|X = 1)$

2. Suppose the joint distribution of X and Y is such that

$$E[X] = 5 \quad E[X^2] = 30 \quad E[Y|X] = 2 + 3X \quad Var[Y] = 81$$

Find (a) $Cov(X, Y)$ and (b) $Corr(X, Y)$



3. Let X and Y be random variables with the following joint distribution

$$f(x, y) = P(X = x, Y = y) = 1/8$$

If $x \in \{-1, 0, 1\}$ and $y \in \{-1, 0, 1\}$ BUT $(x, y) \neq (0, 0)$

Show that the $\text{Cov}(X, Y) = 0$ BUT X and Y ARE NOT INDEPENDENT.