Name **Surname** **Student ID.**
DUE DATE : Tuesday 1^{st}, September 2015.

Assignment 1

1. Let X and Y have the join 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

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

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 Cov(X,Y) =0 BUT X and Y ARE NOT INDEPENDENT.