Name **Surname** **Student ID.**

DUE DATE : Tuesday 8^{st}, September 2015.

Assignment 2

1. The joint probability density function of X and Y is given by

$$f(1,1) = \frac{1}{8} \qquad f(1,2) = \frac{1}{4} \qquad f(2,1) = \frac{1}{8} \qquad and \qquad f(2,2) = \frac{1}{2}$$

(a) Compute the conditional probability density function of X given Y = i, i=1,2

(b) Are X and Y independent?

(c) Compute the following:

P(X+Y>2) =

P(XY $\leqslant$ 3) =

P($\frac{X}{Y} > 1$) =

2. You arrive at bus stop at 10 o' clock, knowing that the bus will arrive at some time uniformly distributed between 10 and 10:30.

(a) What is the probability that you will have to wait longer than 10 minutes?

(b) If at 10:15 the bus has not yet arrived, what is the probability that you will have to wait at least an additional 10 minutes?

3. Let X be a random variable with probability density function

$$f(x) = \begin{cases} c(1-x^2), & \text{if } -1 < x < 1. \\ 0, & \text{otherwise.} \end{cases} \qquad \text{(Eq.1)}$$

(a) What is the value of c?

(b) P ($0 < X < 0.5$)