**STA 504 Homework #8**

**Due: Monday, November 4**

Answer the following questions based on the given joint density function in problems 1 -4.

1. Find the marginal densities and .
2. Check if the variables X and Y are independent.
3. find the conditional probability distribution function of , given

[Hint: sketch the domain of the joint density function before doing any calculation.]

**Problem 1.**

Let the continuous random vector ( ) have a joint probability density function.

In addition to the (i)-(iii), compute the

**Problem 2.**

Let X and Y be a random vector with a joint probability density function.

Then find the conditional probability distribution function of , given , where .

**Problem 3.**

Let *X* and *Y* be a random vector with a joint probability density function.

**Problem 4.**

Let X and Y have density.

In addition to the (i)-(iii), compute the