**STA 504 Homework #10**

**Due: Monday, November 18**

**Problem 1.**

Let and be continuous random variables with pdf:

(a) Compute the conditional expectation of given .

(b) Given that , what is the expectation of

(c). Compute the conditional expectation of Y2 given Y1

**Problem 2**.

For the daily output of an industrial operation, let denote the amount of sales and , the

costs, in thousands of dollars. Assume that the density functions for  and are given by

and

The daily profit is given by

1. Find
2. Assuming that and are independent, find
3. Would you expect the daily profit to drop below zero very often? Why?

**Problem 3**.

and denoted the lengths of life, in hundreds of hours, for components of types I and II, respectively, in an electronic system. The joint density of and is

The cost of replacing the two components depends upon their length of life at failure and is

given by .

**(1).** Find and

**(2).** Let and . Find