Stat 351 Fall 2007
Assignment #8

This assignment is due at the beginning of class on Friday, November 14, 2008. You must submit solutions to all problems marked with an asterix (*). As indicated on the course outline, solutions will be graded for both content and clarity of exposition. The solutions that you submit must be neat and orderly. Do not crowd your work or write in multiple columns. Your assignment must be stapled and problem numbers clearly labelled.

1. * Suppose that $X_1, X_2, \ldots, X_n$ are independent $N(0,1)$ random variables. Define the random vector $\mathbf{X} = (X_1, \ldots, X_n)'$. Determine the distribution of $\mathbf{X}'\mathbf{X}$.

2. * Suppose that X and Y are independent $N(0,1)$ random variables.

 (a) Compute $P(3X + 4Y > 5)$.

 (b) Compute $P(\min\{X, Y\} < 1)$.

 (b) Compute $P(|\min\{X, Y\}| < 1)$.

 (d) Compute $P(\max\{X, Y\} - \min\{X, Y\} < 1)$.

 (e) Compute $P(X^2 + Y^2 \le 1)$.

Note that you will need to use a table of normal probabilities (or R or SAS) to answer parts (a) through (d).

3. * Problem #1, page 143 and Problem #2, page 143

4.

- Exercise 7.1, page 134

- Problem #3, page 143

- Problem #9, page 144

- Problem #10, page 145

- Problem #11, page 145

- Problem #12, page 145

- Problem #13, page 145

- Problem #14, page 145