Stat 252 Winter 2007
Assignment #8

This assignment is due at the beginning of class on Monday, March 26, 2007. You must submit all problems that are marked with an asterix (*).

1. * Consider observing a single random variable X from an Exponential(λ) distribution. We want to test $H_0 : \lambda = 1$ against $H_A : \lambda = 1/2$ by rejecting H_0 if $X < c$. (For the exponential distribution, smaller values of the parameter λ tend to produce smaller values of X.) By changing c, we will change both α and β, the probabilities of a Type I and Type II error, respectively. Can you find a direct relationship between α and β which illustrates the tradeoff between them?

2. * Suppose that $X_1, \ldots, X_n$ are iid from the Exponential(λ) distribution. Starting with an approximate confidence interval for λ based on the Fisher information, construct a test of $H_0 : \lambda = 1/5$ against $H_A : \lambda \neq 1/5$ at (approximate) significance level 0.1.

3. Do the following exercises from Wackerly, et al.

- #10.10, page 474

- #10.38, page 482

- #10.50, page 495

- #10.73, page 507

4. Do the following exercises from Wackerly, et al.

- #10.79 (a), (b), page 515

- #10.83 (a), page 515