Stat 252 Winter 2007
Assignment #3

This assignment is due at the beginning of class on Wednesday, January 31, 2007. You must submit all problems that are marked with an asterix (*).

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

- page 351 #7.38

- page 352 #7.40

- page 352 #7.41

2. * Suppose that $Y_1, \ldots, Y_n$ constitute a random sample of size n from a population with a uniform distribution on the interval $(0, \theta)$, where θ is unknown. In order to estimate θ we will consider the estimator

$$\hat{\theta} = \min(Y_1, \ldots, Y_n).$$

(a) Quickly write down the density of Y_1.

(b) Compute the density of $\hat{\theta}$.

(c) Using your density from **(b)**, find $\mathbb{E}(\hat{\theta})$.

(d) Is $\hat{\theta}$ an unbiased estimator of θ? Why or why not? If it is not an unbiased estimator, then find an estimator of θ which *is* unbiased.

(Note: This exercise outlines a different approach to solving 8.14, page 370 in the text.)