Statistics 1211 Spring 2008 HW 8
Due in class or in my mailbox before class on April 7

Section 1 (graded) from Devore, 7th edition: Exercises

$$6.2.21, \ 6.2.24, \ 6.29, \ 6.32, \ 6.35, \ 6.36$$

Section 2 (ungraded) from Devore, 7th edition:

1) Read the example from the textbook Example 6.18 as in class, derive the method of moments estimator, the maximum likliehood estimator (yourself), calculate the bias and variance of each estimator.

2) Give examples of three collections of numbers, each with the same sample mean (0) and same sample standard deviation (1).

In R, use the "runif" command to generate 4 samples from a uniform distribution on the interval $(0, 1)$. The mean of the distribution is $\frac{1}{2}$. Now, pretend you didn't know the distribution producing the random numbers produced by R, and that you want to estimate the mean of the distribution.

Calculate an estimator for the mean using R, for example, if $x < -runif(10, 0, 1)$ generates 10 random numbers, the sample mean would be

$$m < -sum(x)/4.$$

Repeat a calculation of m 20 times and count the number of times $\frac{1}{2}$ appears in the interval $[m - .1, m + .1]$. Describe how this procedure could relate to how confident you are about your estimate.