MA 486/586-2D (Statistics), Dr. Chernov                    Assignment #4
Due Tue, Feb 21

7th edition: 6.3-4ab, 6.14-2, 6.14-4a, 8.1-2.

6th edition: 9.1-4ab, 9.6-2, 9.6-4a, 8.1-2, 7.1-20*abc.

The starred problems are for extra credit. Each problem is graded on the base of "4 points max".

There is no equivalent of problem 7.1-20 in the 7th edition, so here it is:

7.1-20. Let $Y_1 < Y_2 < \ldots < Y_n$ be the order statistics of a random sample of size $n$ from the uniform distribution $U(0, \theta)$.
   (a) Show that the maximum likelihood estimator of $\theta$ is $Y_n$.
   (b) Show that $E(Y_n) = n\theta/(n+1)$ and $\mathrm{Var}(Y_n) = n\theta^2/(n+1)^2(n+2)$.
   (c) Find a constant $c$ so that $cY_n$ is an unbiased estimator of $\theta$.