

MA 486/586-1G (Statistics), Dr. Chernov
Due Mon, Feb 18

Assignment #6

7th edition: 6.3-4ab, 6.14-2, 6.14-4a, and a bonus problem given below.

6th edition: 9.1-4ab, 9.6-2, 9.6-4a, 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 $Y_1 < Y_2 < \dots < Y_n$ 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 θ is Y_n .
- (b) Show that $E(Y_n) = n\theta/(n+1)$ and $\text{Var}(Y_n) = n\theta^2/(n+1)^2(n+2)$.
- (c) Find a constant c so that cY_n is an unbiased estimator of θ .

The average on Test-I is 81 points (out of 100).