MA 486/586-1C (Statistics), Dr. Chernov Due Mon, Feb 17 Assignment #6

10.1-4ab, 10.7-2, 10.7-4a, and the bonus problem given below.

[Bonus] 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 θ is Y_n .

(b) Show that $E(Y_n) = n\theta/(n+1)$ and $\operatorname{Var}(Y_n) = n\theta^2/(n+1)^2(n+2)$.

(c) Find a constant c so that cY_n is an unbiased estimator of θ .

The average in the first midterm test is 89 points (out of 100).