Assignment 4.

Due Oct 16.

1. If $\{X_i\}$ are independent observations from the uniform distribution on $[-\theta, \theta]$, i.e with density given by

$$f(\theta, x) = \frac{1}{2\theta}; \quad -\theta \leq x \leq \theta$$

Is there a sufficient statistic? What is it? Why is it sufficient?

2. For the uniform distribution on $[0, \theta)$, i.e

$$f(\theta, x) = \frac{1}{\theta}; \quad 0 \leq x \leq \theta$$

take $t = \max\{x_1, \ldots, x_n\}$. What is $E[t]$. Find a constant c such that $u = ct$ is unbiased. What is the variance of u? Is it consistent with Cramér-Rao bound?