

Homework 2

STA321

Due Feb. 17

1. Given n independent observations: X_1, X_2, \dots, X_n with a density function given by

$$f(x) = x^3 e^{-x/\theta} \frac{1}{6\theta^4} \quad \text{for } x > 0.$$

where $0 < \theta$ is the unknown parameter. Find the MLE of θ based on the n observations.

[do not forget to check the second derivative to make sure it is a max]

2. Given n independent observations $X_1, X_2, \dots, X_n \sim Unif(0, \theta)$. where $0 < \theta < \infty$ is the unknown parameter. Find the MLE of θ .

[hint: derivative do not work here.]

3. Suppose Y_1, Y_2, \dots, Y_n are independent with a Poisson distribution with unknown parameter λ .

Find MLE of λ .