Homework 5

10/10/22

Homework 5 is due 10/21/2022 at 11:59 PM. Submit your homework on Canvas as one PDF document.

The PDF version of this assignment can be found here.

1. Let $X_1, X_2, \ldots, X_n$ be iid with the following density function

$$f(x) = \begin{cases} (\theta+1)x^\theta & 0 \le x \le 1; \theta > -1 \\ 0 & \text{elsewhere} \end{cases}$$

   Find the MLE for θ.

2. Let $X_1, X_2, \ldots, X_n$ be iid with the following density function

$$f(x) = \begin{cases} \frac{1}{\Gamma(\alpha)\theta^\alpha} x^{\alpha-1} e^{-x/\theta} & 0 < x; 0 < \theta \\ 0 & \text{elsewhere} \end{cases}$$

   where $\alpha > 0$ is known. Find the MLE for θ.

3. Let $X_1, X_2, \ldots, X_n$ be iid with the following density function

$$f(x) = \begin{cases} e^{-(x-\theta)} & x > \theta \\ 0 & \text{elsewhere} \end{cases}$$

   Find the method of moment estimator for θ.