

X



reviewer4@nptel.iitm.ac.in ▼

Courses » Probability and Statistics

Announcements

Course

Ask a Question

Progress

FAQ

Unit 11 - Week 9

Register for Certification exam

Course outline

How to access the portal

Week 0

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

● Lecture 53 : Introduction to Estimation

● Lecture 54 : Unbiased and Consistent Estimators

○ Lecture 55 : LSE, MME

● Lecture 56: Examples on MME, MLE

○ Lecture 57 : Examples on MLE-I

● Lecture 58 : Examples on MLE-II, MSE

○ Quiz : Assignment 9

Assignment 9

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2019-04-03, 23:59 IST

1) 1 point
 Let X_1, \dots, X_m be a random sample from Bernoulli distribution with parameters p , $0 < p < 1$. Which of the following is an unbiased estimator of $p(1-p)$?

- a. $\frac{m}{m-1}(\bar{X}(1+\bar{X}))$
- b. $\frac{m}{m-1}(\bar{X}(1-\bar{X}))$
- c. $\frac{m}{m+1}(\bar{X}(1-\bar{X}))$
- d. $\frac{m}{m+1}(\bar{X}(1+\bar{X}))$

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

b.

2) 1 point
 Let X_1, \dots, X_n be a random sample from $N(\theta, \theta)$, where $\theta > 0$. Let $U = \frac{1}{n} \sum_{i=1}^n X_i^2$. Find the MLE of θ .

- a. $-\frac{1}{2} + \frac{1}{2}\sqrt{1+4U}$
- b. $-\frac{1}{2} - \frac{1}{2}\sqrt{1+4U}$
- c. $-\frac{1}{2} + \frac{1}{2}\sqrt{1-4U}$
- d. $-\frac{1}{2} - \frac{1}{2}\sqrt{1-4U}$

© 2014 NPTEL - Privacy & Terms - Honor Code - FAQs -

A project of



In association with



Funded by

Government of India
 Ministry of Human Resource Development

Powered by

Week 12

Download Videos

Assignment
Solution

No, the answer is incorrect.

Score: 0

Accepted Answers:

a.

3) 1 point
 Let X_1, \dots, X_n be a random sample from $U(1, \theta)$, where $\theta > 1$. If $X_{(1)} = \min(X_1, \dots, X_n)$
 $X_{(n)} = \max(X_1, \dots, X_n)$. Which of the following is an unbiased estimator of θ ?

a. $\frac{n+1}{n} X_{(n)} + \frac{1}{n}$

b. $\frac{n}{n+1} X_{(n)} - \frac{1}{n}$

c. $2\bar{X} - 1$

d. $\frac{n}{n+1} X_{(n)} + \frac{1}{n}$

- a.
 b.
 c.
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

c.

4) In Question 3, find the MLE of θ . 1 point

a. \bar{X}

b. nX_1

c. $n(n-1)X_1$

d. $X_{(n)}$

- a.
 b.
 c.
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

d.

5) 1 point
 Let X_1, \dots, X_n be a random sample from a Poisson distribution with parameter λ . The
 limiting distribution of $\sqrt{n}(\bar{X} - \lambda)$ is normal distribution with mean 0 and variance

a. 1

b. $\sqrt{\lambda}$

c. λ

d. λ^2

- a.
 b.
 c.
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

c.

6) Let X_1, \dots, X_n be a random sample from a distribution with density

1 point

$$f(x, \theta) = \begin{cases} \theta e^{-\theta(x-1)}, & x \geq 1 \\ 0, & \text{otherwise} \end{cases}, \theta > 0.$$

Find the MLE of θ .

- a. $\frac{1}{\bar{X}-1}$
- b. $\frac{1}{\bar{X}+1}$
- c. $\frac{1}{\bar{X}}$
- d. $\frac{1}{2\bar{X}-1}$

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

a.

7) Let X_1, \dots, X_n be a random sample from a distribution with density

1 point

$$f(x, \lambda) = \begin{cases} \lambda e^{-\lambda x}, & x \geq 0, \lambda > 0 \\ 0, & \text{otherwise} \end{cases}$$

Which of the following is an unbiased estimator of λ ?

- a. \bar{X}
- b. $\frac{1}{\bar{X}}$
- c. $\frac{n-1}{n\bar{X}}$
- d. $\frac{n-1}{\bar{X}}$

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

c.

8)

1 point

Let X_1, \dots, X_n be a random sample from exponential distribution with mean μ . Which among the following is not an unbiased estimator for μ ?

- a. X_1
- b. \bar{X}
- c. $\frac{1}{n} X_{(n)}$
- d. $\frac{2}{n(n+1)} \sum_{i=1}^n iX_i$

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

c.

9) In Question 8, find the MSE of an estimator $T = \frac{1}{n+1} \sum_{i=1}^n X_i$.

1 point

- a. μ^2
- b. $\frac{\mu^2}{n+1}$
- c. $\frac{\mu^2}{n(n+1)}$
- d. $\frac{n\mu^2}{n+1}$

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

b.

10)

1 point

Let X_1, \dots, X_n be a random sample from normal distribution with mean μ and σ^2 . Which among the following is not a consistent estimator for σ^2 ?

- a. S^2
- b. $\frac{n-1}{n} S^2$
- c. $\frac{n+1}{n} S^2$
- d. $\frac{S^2}{n}$

- a.
- b.
- c.

d.

No, the answer is incorrect.
Score: 0

Accepted Answers:
d.

◀ Previous Page

End ▶

