8. Exercise: LMS example

Exercises due Apr 15, 2020 05:29 IST *Completed*

Exercise: LMS example

1/1 point (graded)

The random variables Θ and X are described by a joint PDF which is uniform on the triangular set defined by the constraints $0 \leq x \leq 1, 0 \leq \theta \leq x$. Find the LMS estimate of Θ given that $X = x$, for x in the range $[0, 1]$. Express your answer in terms of x using standard notation.

x/2 ✔ **Answer:** x/2

STANDARD NOTATION

Solution:

The conditional PDF of Θ given that $X = x$ is uniform on the set $[0, x]$. Thus, the conditional expectation of Θ given that $X = x$ is equal to $x/2$.

Submit You have used 3 of 3 attempts

Answers are displayed within the problem

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Good opportunity to practice your skills on deriving a conditional expectation from a joint PDF

1 new 19

Try to solve this exercise analytically not graphically.

if the problem were complex... 4

If this were a complex problem with variable that are not uniform, would the way to find LMS be doing d...

How to go about deriving this one analytically? 1

I found the correct by mere "copying and pasting" the same analogy the professor did in his lecture vide...

Hint for this problem 4

If you are spending too much time on this, refer to the stick breaking example in lecture 10. It was very u...

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