22. Exercise: Inference of the bias of a coin

Exercises due Mar 13, 2020 05:29 IST *Past Due*

Exercise: Inference of the bias of a coin

1 point possible (graded)

The random variable K is geometric with a parameter which is itself a uniform random variable Q on $[0,1]$. Find the value $f_{Q|K}\left(0.5 \mid 1\right)$ of the conditional PDF of Q, given that $K = 1$. *Hint:* Use the result in the last segment.

Answer: 1

Solution:

We identify Q with the variable Y in the last segment. The information that $K = 1$ is the information that the first coin flip resulted in Heads, which is the same as the information that $K = 1$ in the last segment. Therefore, the conditional PDF of Q is $2q$, which for $q = 0.5$ evaluates to 1.

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Answers are displayed within the problem

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? Hint?

I find the Hint rather misguiding than helpful. What is exactly meant by "the last segment"? 8