Problem 3: A Joint PDF given by a simple formula

(4/4 points)

Random variables X and Y are distributed according to the joint PDF

$$f_{X,Y}(x,y) = \begin{cases} ax, & \text{if } 1 \le x \le 2 \text{ and } 0 \le y \le x, \\ 0, & \text{otherwise.} \end{cases}$$

1. Find the constant a.

$a =$ 3/7 ✔

2. Determine the marginal PDF $f_Y(y)$. (Your answer can be either numerical or algebraic functions of y).

For $0 \le y \le 1$,

$f_Y(y) =$ 9/14 ✔

For $1 < y \le 2$,

$f_Y(y) =$ (3/14)*(4-y^2) ✔

3. Determine the conditional expectation of $1/X$ given that $Y = 3/2$.

$\mathbf{E}[1/X \mid Y = 3/2] =$ 4/7 ✔

You have used 2 of 2 submissions

DISCUSSION

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