15. Exercise: Finding a marginal PDF

Exercises due Mar 13, 2020 05:29 IST *Completed*

Exercise: Finding a marginal PDF

1/1 point (graded)

The random variables X and Y are described by a uniform joint PDF of the form $f_{X,Y}(x,y) = 3$ on the set $\{(x,y) \mid 0 \le x \le 1,\ 0 \le y \le 1,\ y \le x^2\}$.

Then, $f_X(0.5) =$ 0.75 ✔ **Answer:** 0.75

Solution:

For any $x \in [0,1]$, and using also the fact that the PDF is zero outside the specified set of x-y pairs, we have $f_X(x) = \int_{-\infty}^{\infty} f_{X,Y}(x,y)\,dy = \int_0^{x^2} 3\,dy = 3x^2$. Therefore, $f_X(0.5) = 3/4$.

Submit You have used 2 of 3 attempts

Answers are displayed within the problem

Discussion

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Question about intuitive meaning

I got the answer right by just following the math as presented in the video, but I'm having trouble interpr

- Is it ok to use an online integration calculator? — 4
  I was able to setup the integral correctly but I simply used an online integral calculator to get the answer,...
- question — 1 new
  Hello, I don't understand how do we know if we should integrate with respect y I mean (Integral of 3*dy)...
- How can f_X,_Y(x,y)=3? — 5 new — 7