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## 3. Exercise: A conditional PDF

Exercises due Mar 13, 2020 05:29 IST Completed

Exercise: A conditional PDF

1/1 point (graded)

Suppose that X has a PDF of the form

$$f_{X}\left(x
ight)=egin{cases} 1/x^{2}, & ext{if } x\geq1, \ 0, & ext{otherwise}. \end{cases}$$

For any x>2 , the conditional PDF of X , given the event X>2 is

2/x^2

**✓ Answer:** 2/(x^2)

(Your answer should be an algebraic function of x, in <u>standard notation</u>.)

## **STANDARD NOTATION**

## **Solution:**

The conditional PDF will be a scaled version of the unconditional, of the form  $\frac{f_X(x)}{\mathbf{P}(X>2)}$ . Now,

$$\mathbf{P}\left(X>2
ight)=\int_{2}^{\infty}rac{1}{x^{2}}\,dx=-rac{1}{x}\Big|2_{\infty}=1/2,$$
 and so the answer is  $2/x^{2}.$ 

Submit

You have used 2 of 3 attempts

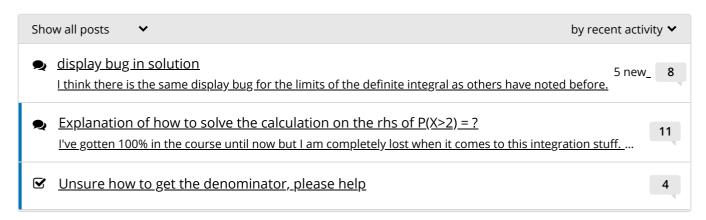
**1** Answers are displayed within the problem



## Discussion

**Hide Discussion** 

**Topic:** Unit 5: Continuous random variables:Lec. 9: Conditioning on an event; Multiple r.v.'s / 3. Exercise: A conditional PDF



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