



## MITx: 6.041x Introduction to Probability - The Science of Uncertainty



Bookmarks

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Unit overview

**Lec. 8: Probability density functions**

Exercises 8 due Mar 16, 2016 at 23:59 UTC

**Lec. 9: Conditioning on an event; Multiple r.v.'s**

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Bookmark

**Exercise: Piecewise constant PDF**

(2/2 points)

Consider a piecewise constant PDF of the form

$$f_X(x) = \begin{cases} 2c, & \text{if } 0 \leq x \leq 1, \\ c, & \text{if } 1 < x \leq 3, \\ 0, & \text{otherwise.} \end{cases}$$

Find the following values.

a)  $c =$   ✓ Answer: 0.25b)  $\mathbf{P}(1/2 \leq X \leq 3/2) =$   ✓

Answer: 0.375

Answer:

a) The total area under the PDF is the sum of the areas of two rectangles and is equal to  $(2c) \cdot 1 + c \cdot 2 = 4c$ . Therefore,  $c = 1/4$ .b) The total area under the PDF over the interval of interest is the sum of the areas of two smaller rectangles and is equal to  $(2c) \cdot (1/2) + c \cdot (1/2) = c \cdot (3/2) = 3/8$ .

You have used 2 of 2 submissions

**Lec. 10:**  
**Conditioning on a  
random variable;**  
**Independence;**  
**Bayes' rule**

Exercises 10 due Mar  
16, 2016 at 23:59 UTC

**Standard normal  
table**

**Solved problems**

**Problem Set 5**

Problem Set 5 due Mar  
16, 2016 at 23:59 UTC

**Unit summary**

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