5. Exercise: Piecewise constant PDF

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

Exercise: Piecewise constant PDF

2/2 points (graded)

Consider a piecewise constant PDF of the form

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

Find the following values.

a) $c =$ 1/4 ✔ **Answer:** 0.25

b) $\mathbf{P}(1/2 \le X \le 3/2) =$ 3/8 ✔ **Answer:** 0.375

Solution:

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 $(2c) \cdot (1/2) + c \cdot (1/2) = c \cdot (3/2) = 3/8$.

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Answers are displayed within the problem

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Why the PDF 'c' is multiplied by 2? 8

? hi
hi, tell me about the c? 2 new 4