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

Unit 5: Continuous random variables > Lec. 9: Conditioning on an event; Multiple r.v.'s > Lec 9 Conditioning on an event Multiple r v s vertical6

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Exercise: Finding a marginal PDF
(1/1 point)

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, $f_X(0.5) =$ 3/4   ✔ **Answer:** 0.75

Answer:
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, $f_X(0.5) = 3/4$.

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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