



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



Bookmarks

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Unit overview

Lec. 5: Probability mass functions and expectations

Exercises 5 due Mar 02, 2016 at 23:59 UTC

Lec. 6: Variance; Conditioning on an event; Multiple r.v.'s

Exercises 6 due Mar 02, 2016 at 23:59 UTC

Lec. 7: Conditioning on a random variable; Independence of r.v.'s

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Bookmark

Exercise: Random variables versus numbers

(2/2 points)

Let \mathbf{X} be a random variable that takes integer values, with PMF $p_X(x)$. Let \mathbf{Y} be another integer-valued random variable and let y be a number.

 a) Is $p_X(y)$ a random variable or a number?



Answer: Number

 b) Is $p_X(Y)$ a random variable or a number?



Answer: Random variable

Answer:

a) Recall that $p_X(\cdot)$ is a function that maps real numbers to real numbers. So, when we give it a numerical argument, y , we obtain a number.

b) In this case, we are dealing with a function, the function being $p_X(\cdot)$, of a random variable \mathbf{Y} . And a function of a random variable is a random variable. Intuitively, the "random" value of $p_X(\mathbf{Y})$ is generated as follows: we observe the realized value y of the random variable \mathbf{Y} , and then look up the numerical value $p_X(y)$.

You have used 1 of 1 submissions

Exercises 7 due Mar
02, 2016 at 23:59 UTC

Solved problems

**Additional
theoretical
material**

Problem Set 4

Problem Set 4 due Mar
02, 2016 at 23:59 UTC

Unit summary

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