



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: The binomial PMF

(2/2 points)

You roll a fair six-sided die (all 6 of the possible results of a die roll are equally likely) 5 times, independently. Let X be the number of times that the roll results in 2 or 3. Find the numerical values of the following.

a) $p_X(2.5) =$ ✓ Answer: 0

b) $p_X(1) =$ ✓ Answer: 0.32922

Answer:

a) A value of 2.5 is not possible for X since the number of rolls must be an integer, and therefore $p_X(2.5) = 0$.

b) For each die roll, there is a probability $2/6 = 1/3$ of obtaining a 2 or a 3. Hence, the random variable X is binomial with parameters $n = 5$ and $p = 1/3$, so that $p_X(1) = \binom{5}{1} \cdot (1/3) \cdot (2/3)^4 \approx 0.32922$.

You have used 1 of 2 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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