

On Tuesday, February 23rd at 6:00AM EST, UTC-5, we will be conducting a brief database maintenance. The event should last about 5 minutes.



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



Bookmarks

- ▶ Unit 0: Overview
- ▶ Entrance Survey
- ▶ Unit 1: Probability models and axioms
- ▶ Unit 2: Conditioning and independence
- ▶ Unit 3: Counting
- ▼ Unit 4: Discrete random variables

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

Unit 4: Discrete random variables > Problem Set 4 > Problem 2 Vertical: Three-sided dice



Bookmark

Problem 2: Three-sided dice

(9/9 points)

We have two fair three-sided dice, indexed by $i = 1, 2$. Each die has sides labelled 1, 2, and 3. We roll the two dice independently, one roll for each die. For $i = 1, 2$, let the random variable X_i represent the result of the i th die, so that X_i is uniformly distributed over the set $\{1, 2, 3\}$. Define $X = X_2 - X_1$.

1. Calculate the numerical values of following probabilities, as well as the expected value and variance of X :

$$\mathbf{P}(X = 0) =$$

1/3



$$\mathbf{P}(X = 1) =$$

2/9



$$\mathbf{P}(X = -2) =$$

1/9



$$\mathbf{P}(X = 3) =$$

0



$$\mathbf{E}[X] =$$

0



$$\text{var}(X) =$$

4/3



2. Let $Y = X^2$. Calculate the following probabilities:

$$\mathbf{P}(Y = 0) =$$

1/3



$$\mathbf{P}(Y = 1) =$$

4/9



$$\mathbf{P}(Y = 2) =$$

0



You have used 1 of 2 submissions

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

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

DISCUSSION

Click "Show Discussion" below to see discussions on this problem.

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