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



- Unit 0: Overview
- EntranceSurvey
- 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 UT

Lec. 6: Variance; Conditioning on an event; Multiple r.v.'s Exercises 6 due Mar 02, 2016 at 23:59 UT Unit 4: Discrete random variables > Problem Set 4 > Problem 3 Vertical: PMF, expectation, and variance

■ Bookmark

Problem 3: PMF, expectation, and variance (6/6 points)

The random variables \boldsymbol{X} and \boldsymbol{Y} have the joint PMF

$$p_{X,Y}(x,y)=\left\{egin{array}{ll} c\cdot(x+y)^2, & ext{if } x\in\{1,2,4\} ext{ and } y\in\{1,3\}, \ 0, & ext{otherwise}. \end{array}
ight.$$

All answers in this problem should be numerical.

1. Find the value of the constant c.

2. Find ${f P}(Y < X)$.

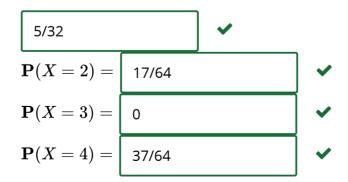
$$\mathbf{P}(Y < X) = \boxed{83/128}$$

3. Find $\mathbf{P}(Y=X)$.

$$\mathbf{P}(Y=X)= \boxed{ 1/32 }$$

4. Find the following probabilities.

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



Problem 3: PMF, expectation, and variance | Problem Set 4 | 6.041x Courseware | edX

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

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

Solved problems

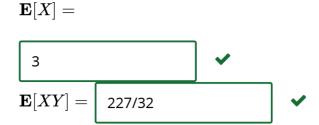
Additional theoretical material

Problem Set 4

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

Unit summary

5. Find the expectations $\mathbf{E}[X]$ and $\mathbf{E}[XY]$.



6. Find the variance of X.

$$var(X) =$$
1.46875

You have used 1 of 4 submissions

DISCUSSION

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

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