



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
- ▶ Exam 1
- ▶ Unit 5: Continuous random variables
- ▼ Unit 6: Further topics on random variables

Unit overview

Lec. 11: Derived distributions

Exercises 11 due Mar 30, 2016 at 23:59 UTC

Unit 6: Further topics on random variables > Lec. 12: Sums of independent r.v.'s; Covariance and correlation > Lec 12 Sums of independent r v s Covariance and correlation vertical

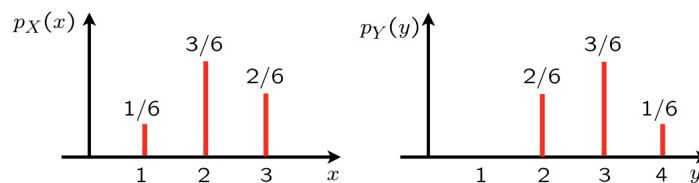


Bookmark

Exercise: Discrete convolution

(1/1 point)

The random variables X and Y are independent and have the PMFs shown in this diagram.



The probability that $X + Y = 6$ is:

1/4



Answer: 0.25

(Although you can find the answer by inspection, try to use the flip-and-shift graphical method.)

Answer:

We flip the PMF of Y to obtain a PMF on the set $\{-4, -3, -2\}$. We shift it to the right by 6 and place it underneath the PMF of X . By multiplying the probabilities that are on top of each other in the resulting diagram, we obtain

$$p_{X+Y}(6) = \frac{1}{6} \cdot \frac{3}{6} + \frac{3}{6} \cdot \frac{2}{6} = \frac{9}{36} = 1/4.$$

You have used 2 of 2 submissions

Lec. 12: Sums of independent r.v.'s; Covariance and correlation

Exercises 12 due Mar 30, 2016 at 23:59 UTC

Lec. 13: Conditional expectation and variance revisited; Sum of a random number of independent r.v.'s

Exercises 13 due Mar 30, 2016 at 23:59 UTC

Solved problems

Additional theoretical material

Problem Set 6

Problem Set 6 due Mar 30, 2016 at 23:59 UTC

Unit summary

© All Rights Reserved



© edX Inc. All rights reserved except where noted. EdX, Open edX and the edX and Open EdX logos are registered trademarks or trademarks of edX Inc.

POWERED BY
OPENedX

