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Unit overview

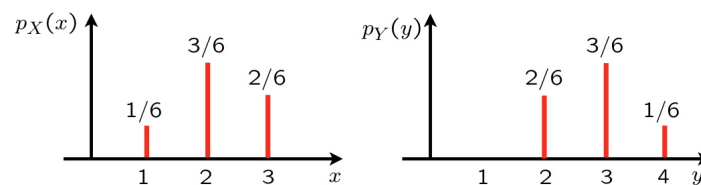
**Lec. 11: Derived
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Exercise: Linear functions of discrete r.v.'s

(2/2 points)

The random variables \mathbf{X} and \mathbf{Y} obey a linear relation of the form $\mathbf{Y} = \mathbf{a}\mathbf{X} + \mathbf{b}$ and have the PMFs shown in the diagram. Find the values of \mathbf{a} and \mathbf{b} .



$\mathbf{a} =$ ✓ Answer: -1

$\mathbf{b} =$ ✓ Answer: 5

Answer:

Because the entries of the PMF of \mathbf{Y} appear in the opposite order than the entries of the PMF of \mathbf{X} , we know that \mathbf{a} has to be negative. Furthermore, the spread of the PMF of \mathbf{Y} is the same as the spread of the PMF of \mathbf{X} , and therefore, $\mathbf{a} = -1$. The random variable $-\mathbf{X}$ takes values in the set $\{-3, -2, -1\}$. To obtain the given PMF of \mathbf{Y} , we need to shift it (to the right) by $\mathbf{b} = 5$.

You have used 1 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

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