



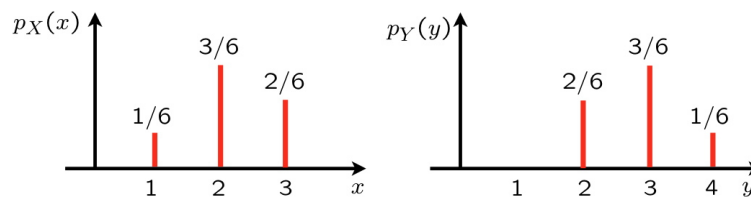
### 3. Exercise: Linear functions of discrete r.v.'s

Exercises due Mar 25, 2020 05:29 IST Completed

#### Exercise: Linear functions of discrete r.v.'s

2/2 points (graded)

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



$a =$   ✓ Answer: -1

$b =$   ✓ Answer: 5

#### Solution:

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

You have used 2 of 3 attempts



**i** Answers are displayed within the problem

## Discussion

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**Topic:** Unit 6: Further topics on random variables:Lec. 11: Derived distributions / 3. Exercise: Linear functions of discrete r.v.'s

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? [STAFF] PROGRESS BAR NOT ACCOUNTING FOR FULL WORK  
Progress bar says i did not complete all classroom exercises. Unless i am missing smth big, i think I did....

1

💬 Extra Time on these lecture exercises -- per email?  
Course staff: Thanks for supplying the extra week of time per your email today -- it will be immensely hel...

4

💬 Personal Experience  
If I can work out a problem, I usually have a working process of my own. However, reading the given sol...

1 new\_

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