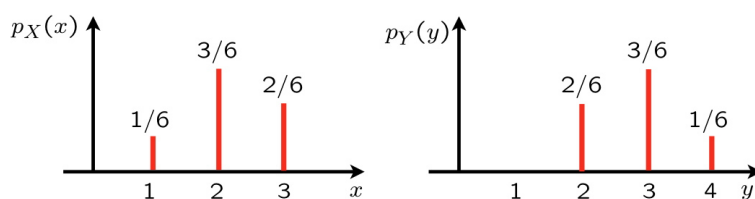


3. Exercise: Discrete convolution

Exercise: Discrete convolution

1/1 point (graded)

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



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

✓ Answer: 0.25

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

Solution:

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

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

提交

You have used 1 of 3 attempts

❗ Answers are displayed within the problem

讨论

显示讨论