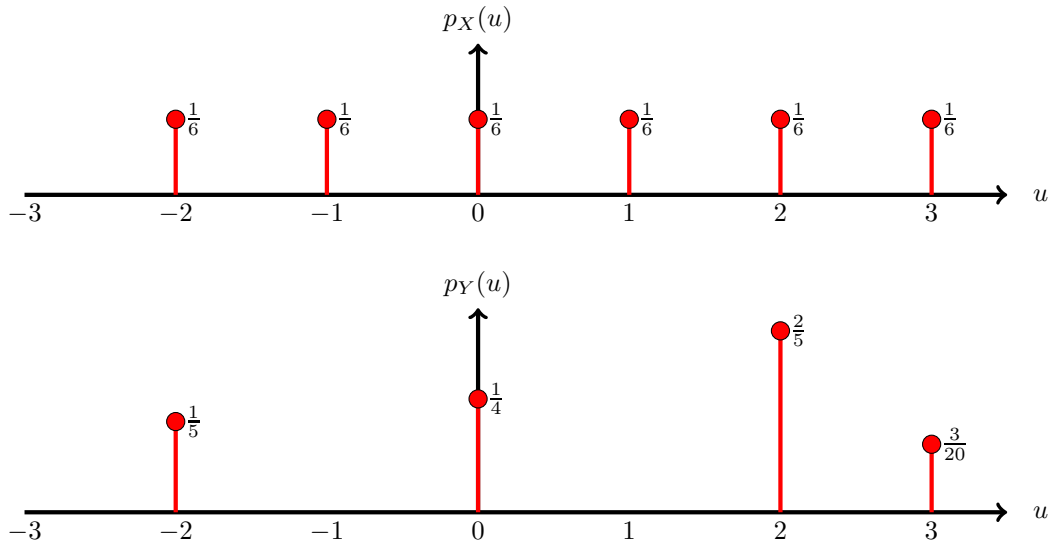
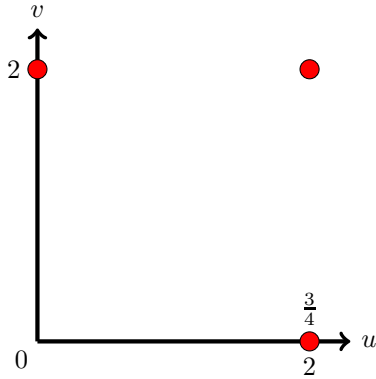


If random variables X and Y are independent and have probability mass functions shown below and $Z = X - Y$, then what is the probability mass function value $p_Z(-1)$?



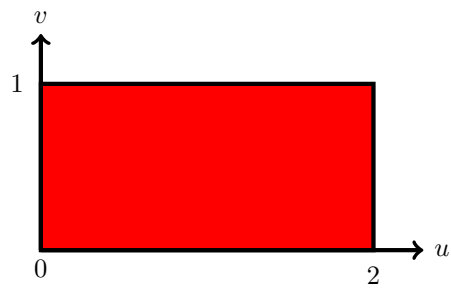
- (a) $2/15$
- (b) $13/15$
- (c) $1/15$
- (d) $11/120$
- (e) $13/120$
- (f) $1/6$
- (g) $1/5$
- (h) $2/5$
- (i) $4/5$
- (j) $1/2$
- (k) $2/3$
- (l) None of these

Suppose random variables X and Y have the joint probability mass function $p_{X,Y}(u,v)$ shown below (only one of its three nonzero probabilities is shown) and their covariance is $-1/4$. What is the probability that X is less than $2/3$?



- (a) $1/12$
- (b) $5/12$
- (c) $5/6$
- (d) $2/3$
- (e) $1/3$
- (f) $1/6$
- (g) $3/5$
- (h) $1/5$
- (i) $1/2$
- (j) 0
- (k) $7/12$
- (l) $5/24$
- (m) None of these

If the joint probability density function of random variables X and Y is constant on the red rectangle shown below, then what is their covariance?



- (a) None of these
- (b) $-1/2$
- (c) $1/2$
- (d) $1/4$
- (e) 2
- (f) 4
- (g) 1
- (h) $1/8$
- (i) $3/4$
- (j) $3/8$
- (k) $2/3$
- (l) -1