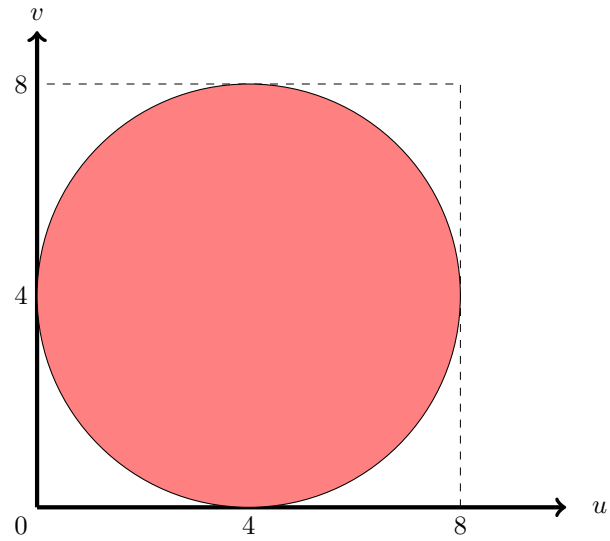
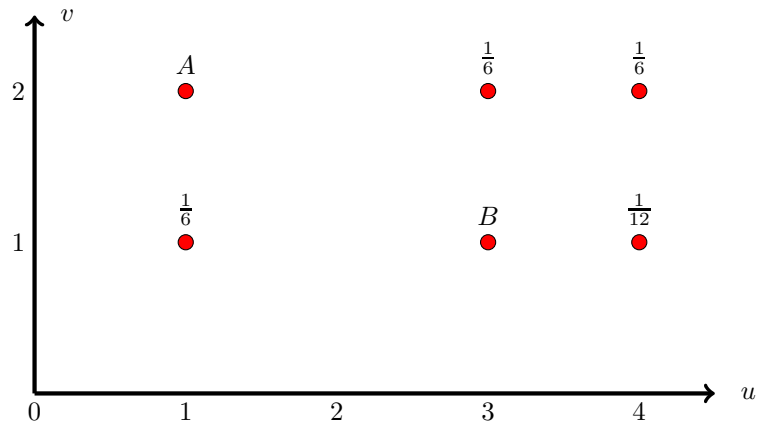


Suppose you pick a point C uniformly at random inside the red circle shown, and then you lie flat a coin of radius 1 on the circle so that the coin's center is at C . What is the probability that the coin will lie entirely within the red circle?



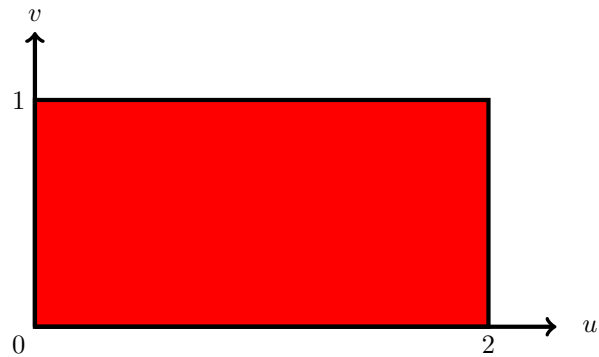
- (a) $9/16$
- (b) $1/3$
- (c) $1/2$
- (d) $2/3$
- (e) $5/6$
- (f) $1/12$
- (g) $1/4$
- (h) $3/4$
- (i) $1/9$
- (j) $2/9$
- (k) $4/9$
- (l) None of these

If independent random variables X and Y have joint probability mass function $p_{X,Y}(u, v)$ shown below, then what is the probability that $XY = 3$?



- (a) None of these
- (b) $1/48$
- (c) $1/2$
- (d) $1/3$
- (e) $1/4$
- (f) $2/3$
- (g) $3/4$
- (h) $1/6$
- (i) $1/24$
- (j) $5/12$
- (k) $5/6$
- (l) $1/9$
- (m) $7/12$

Suppose X and Y are random variables whose joint probability density function $f_{X,Y}(u, v)$ is $\frac{u+2v}{4}$ in the red rectangle shown below, and zero elsewhere. What is the probability that X is greater than $4Y$?



- (a) $5/24$
- (b) $7/24$
- (c) $5/12$
- (d) $7/12$
- (e) $5/6$
- (f) $1/12$
- (g) $1/4$
- (h) $3/4$
- (i) $1/9$
- (j) $2/9$
- (k) $4/9$
- (l) None of these