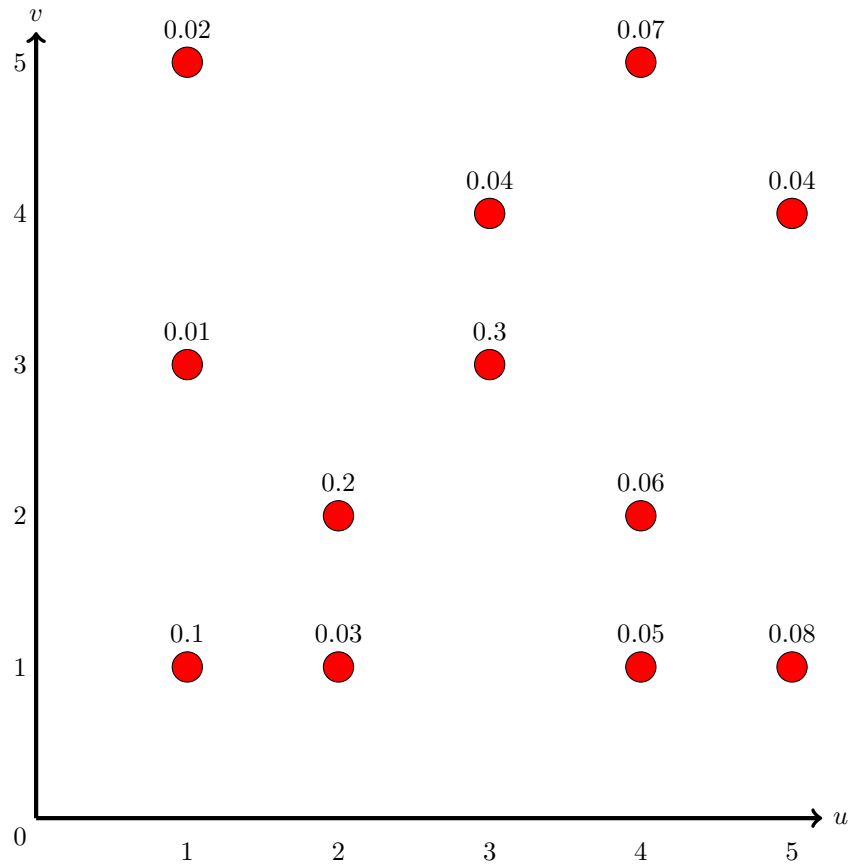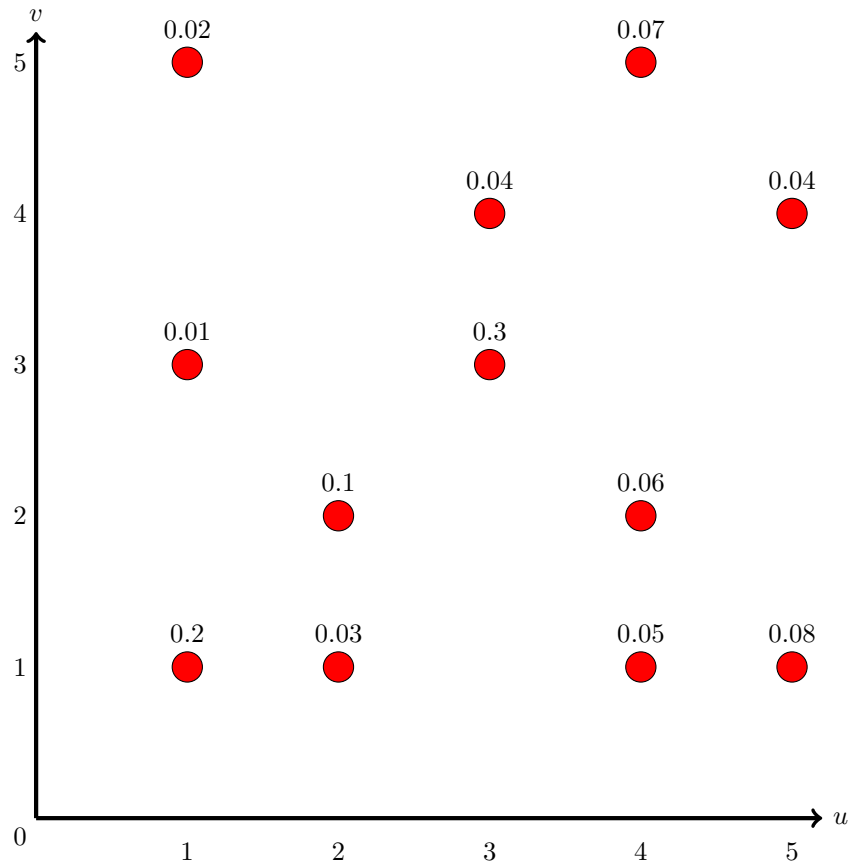Suppose the joint probability mass function $p_{X,Y}(u,v)$ of random variables X and Y is shown below. What is the probability that $X^2 + Y^2$ is greater than $9/2$?

v

0.02 (at $u=1, v=5$)   0.07 (at $u=4, v=5$)

0.04 (at $u=3, v=4$)   0.04 (at $u=5, v=4$)

0.01 (at $u=1, v=3$)   0.3 (at $u=3, v=3$)

0.2 (at $u=2, v=2$)   0.06 (at $u=4, v=2$)

0.1 (at $u=1, v=1$)   0.03 (at $u=2, v=1$)   0.05 (at $u=4, v=1$)   0.08 (at $u=5, v=1$)

u

0   1   2   3   4   5

(a) 0.9

(b) 0.1

(c) 0.13

(d) 0.87

(e) 0.33

(f) 0.67

(g) 0.21

(h) 0.79

(i) 0

(j) 1

(k) None of these

1

Suppose the joint probability mass function $p_{X,Y}(u,v)$ of random variables X and Y is shown below. What is the probability that $X^2 + Y^2$ is greater than $9/2$?
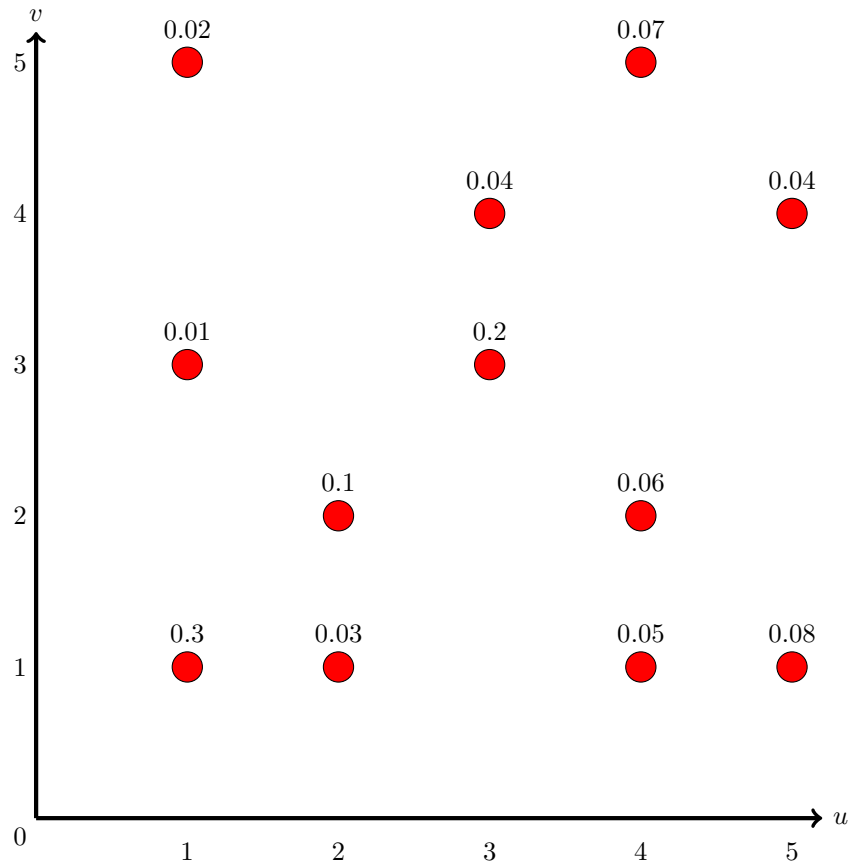
v

0.02

0.07

0.04

0.04

5

0.01

0.3

4

0.1

0.06

3

0.2

0.03

0.05

0.08

2

1

0

1   2   3   4   5 u

(a) 0.8

(b) 0.2

(c) 0.23

(d) 0.77

(e) 0.33

(f) 0.67

(g) 0.21

(h) 0.79

(i) 0

(j) 1

(k) None of these

Suppose the joint probability mass function $p_{X,Y}(u,v)$ of random variables X and Y is shown below. What is the probability that $X^2 + Y^2$ is greater than $9/2$?

(a) 0.7

(b) 0.3

(c) 0.33

(d) 0.67

(e) 0.43

(f) 0.57

(g) 0.21

(h) 0.79

(i) 0

(j) 1

(k) None of these

Solution:
$$P(X^2 + Y^2 > 9/2) = 1 - (X^2 + Y^2 \leq 9/2) = 1 - p_{X,Y}(1,1)$$