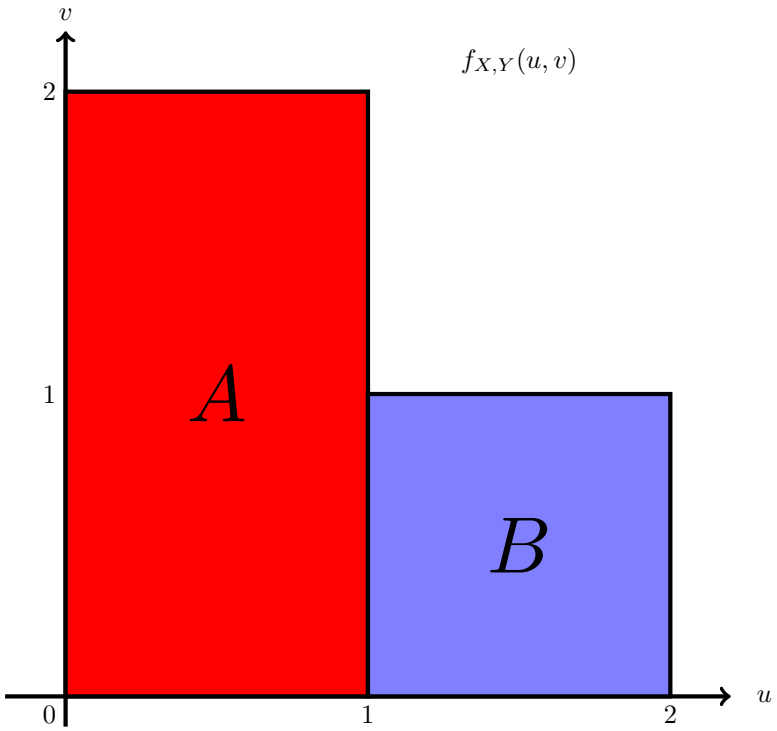
Suppose random variables X and Y have a joint probability density function $f_{X,Y}(u,v)$ which equals A in the red region, B in the blue region, and 0 elsewhere, as shown in the figure. Suppose the joint cummulative distribution function is $F_{X,Y}(u,v)$. If $F_{X,Y}(1,3) = 1/2$, then what is $F_{X,Y}(3/2,3/2) - F_{X,Y}(1,1)$?



(a) 3/8

(b) 3/4

(c) 3/16

(d) 1/8

(e) 1/4

(f) 1/2

(g) 5/16

(h) 7/16

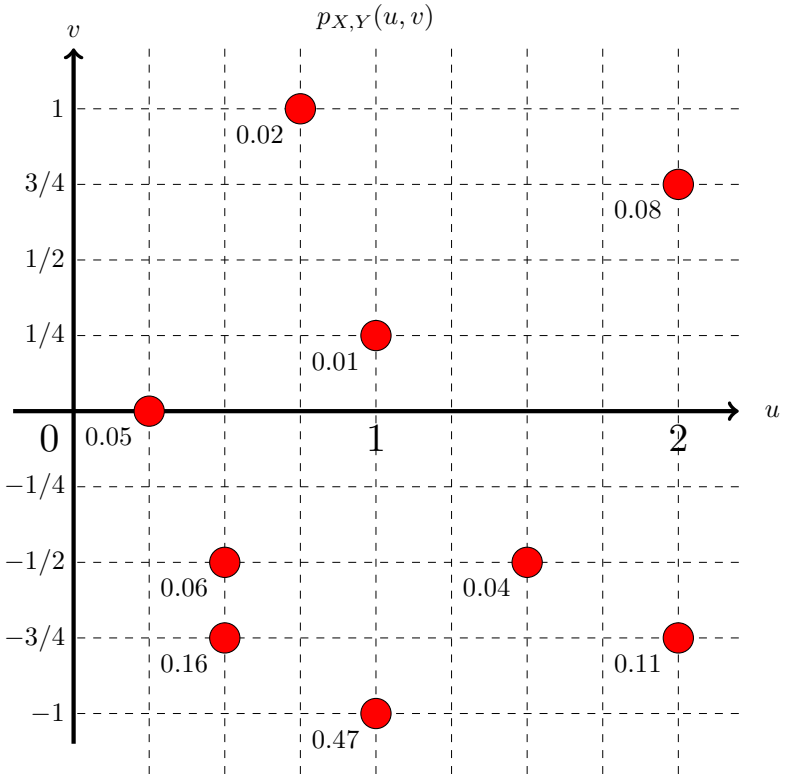
(i) 1/32

(j) 3/32

(k) 5/32

(l) None of these.

Random variables X and Y have the joint probability mass function $p_{X,Y}(u,v)$ shown below, joint cummulative distribution function $F_{X,Y}(u,v)$, and marginal probability mass functions $p_X(u)$ and $p_Y(v)$. What is the value of $p_Y(-2^{-1}) + F_{X,Y}(2^{100}, 2^{-100})$?



(a) 0.99

(b) 0.90

(c) 0.89

(d) 0.94

(e) 1.11

(f) 0.98

(g) 0.1

(h) 1.08

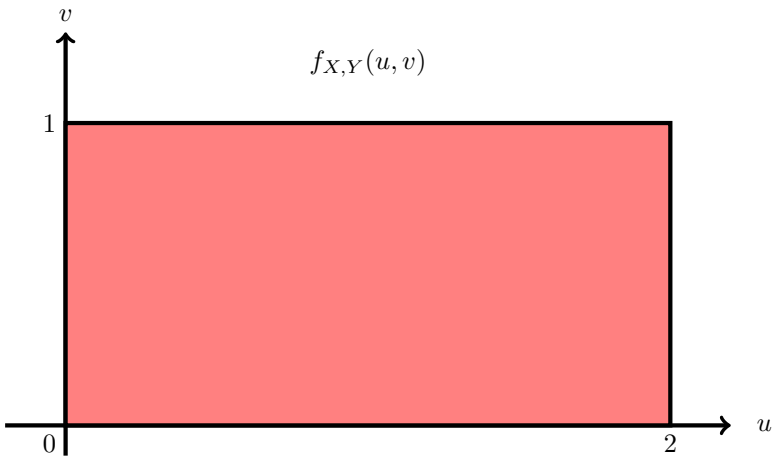
(i) 0.12

(j) 1.37

(k) 0.06

(l) None of these

Suppose random variables X and Y have a joint probability density function $f_{X,Y}(u,v) = uv$ in the red region, and zero elsewhere. What value of A would make the probability that Y is less than A equal to 1/2?



(a) $\sqrt{2}/2$

(b) 1/16

(c) 1/2

(d) 1/4

(e) 1/8

(f) 3/8

(g) 5/8

(h) $1/\sqrt{8}$

(i) $\sqrt{2}$

(j) 1/3

(k) 2/3

(l) None of these.