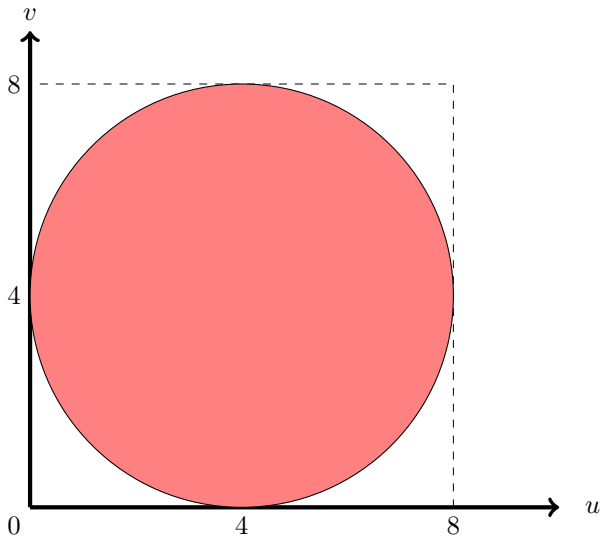
Suppose you pick a point C uniformly at random inside the red circle shown, and then you lie flat a coin of radius 1 on the circle so that the coin's center is at C. What is the probability that the coin will lie entirely within the red circle?



(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