Scott Fullenbaum
Math 87 Engagement 3
Due 2/16/22

At time 2, we have the following outcome:

state	prob	state	prob
(1,1)	.125	(0,2)	.0625
(1,-1)	.125	(-2,0)	.0625
(-1,1)	.125	(0,-2)	.0625
(-1,-1)	.125	(2,0)	.0625
(0,0)	.25		

From (1,1) go to (0, 1), (2, 1), (1,0) (1, 2)
From (1, -1) go to (0, -1), (2, -1), (1, -2), (1,0)
From (-1, 1) go to (0, 1), (-2, 1), (0, -1), (-1, 2)
From (-1, -1) go to (0, -1), (-2, -1), (-1, 0), (-1, -2)
From (0, 0) go to (1, 0) (0, 1) (-1, 0) (0, -1)
From (0, 2) go to (0, 3) (0, 1) (1, 2), (-1, 2)
From (-2, 0) go to (-1, 0), (-3, 0), (-2, 1), (-2, -1)
From (0, -2) go to (1, -2), (-1, -2), (0, -1), (0, -3)
From (2, 0) go to (2, 1), (2, -1), (3, 0), (1, 0)

Probabilities for each outcome are now:
(0, 1): $\frac{4}{36}$
(2, 1): $\frac{2}{36}$
(1, 0): $\frac{2}{36}$
(-1, -2): $\frac{2}{36}$
(1, 2): $\frac{2}{36}$
(0, -1): $\frac{5}{36}$
(2, -1): $\frac{2}{36}$
(1, -2): $\frac{2}{36}$
(-2, 1): $\frac{2}{36}$
(-2, -1): $\frac{2}{36}$
(-1, 0): $\frac{3}{36}$
(-1, 2): $\frac{2}{36}$
(0, 3): $\frac{1}{36}$
(0, -3): $\frac{1}{36}$
(3, 0): $\frac{1}{36}$
(-3, 0): $\frac{1}{36}$