

Name:

1. Please sign your name after the following statement.
I understand that this is a take home test and, while I may consult my own notes, worksheets, homework and textbook, I will not discuss my work with other students or seek assistance from any other sources.

2. Draw a movement diagram for the following payoff matrix and hence find any equilibria.

	A	B	C	D
A	(9,0)	(5,4)	(9,1)	(8,3)
B	(-2,8)	(3,5)	(7,3)	(0,6)
C	(1,-4)	(6,6)	(5,5)	(7,-3)

3. For each of the following games eliminate all dominated strategies and then check for saddle points in the reduced payoff matrix. If there are no saddle points find the optimum mixed strategy for each of the players (Rose and Colin). Find the value of the game.

(a)

	A	B	C	D
A	3	4	3	2
B	2	3	8	1
C	1	6	5	2
D	0	3	9	-1

(b)

	A	B	C	D
A	1	3	3	1
B	2	-1	0	2
C	3	2	3	-1
D	4	0	0	4

4. In professional soccer, when a penalty kick is taken the goal keeper must anticipate the direction of the kick before the kick is taken, otherwise there is not hope of making a save. Suppose that the penalty kicker can kick left or right, and the goal keeper can guess left or right. If the goal keeper guesses incorrectly then the kicker scores 95% of the time when kicking to the right and 85% of the time when kicking to the left. If the keeper guesses correctly, then the kicker scores 55% of the time on the right and 45% of the time on the left. Set up the game matrix with the kicker choosing rows and the goal keeper choosing columns. Find the optimal mixed strategy for the kicker and the keeper, and find the value of the game. What does the value of the game mean?

5. Consider the following variant of the game Mora. Rose shows one or two fingers, and Colin simultaneously shows one, two, or three fingers. If the total number of fingers is even Rose wins. If the total number of fingers is odd, Colin wins. The loser plays the winter one dollar for every finger that the two players are showing. Set up the payoff matrix, find the optimum mixed strategies for Rose and Colin and find the value of the game. Who does the game favor?

6. **Bonus:**

There are 50 bonus points available on this test. The bonus points are awarded as follows: If n people request bonus points they each will get $\frac{50}{n}$ bonus points, rounded to the nearest whole number. If you would like some bonus points indicate this clearly below.