

Problem Set 3
HONORS 259L

Due October 30 electronically or in class.
(Two of these questions will be graded.)

1. Apply elimination of dominated strategies to solve the following game. Be sure to indicate which rows or columns are dominated and by what other rows or columns in each round of elimination.

	C1	C2	C3	C4	C5
R1	(1,4)	(2,7)	(3,10)	(4,1)	(5,5)
R2	(0,0)	(4,0)	(3,2)	(4,5)	(1,1)
R3	(.5,2)	(3,3)	(3,1)	(0,20)	(1,2)

2. Determine whether the following game possesses a dominant strategy for one or both players. Solve the game, explain your answer.

	C1	C2	C3	C4
R1	(1,1)	(11,0)	(1,-2)	(15,1)
R2	(2,20)	(15,11)	(61,18)	(19,21)
R3	(6,-3)	(12,1)	(14,0)	(17,1)
R4	(4,14)	(21,14)	(12,10)	(-1,15)

3. A tennis coach of mine once claimed that 30-15 or 15-30 is most important point. Use back to front reasoning to explain why this claim is not logically sound.
4. Find all the (pure strategy) Nash Equilibria of the following game:

	C1	C2	C3
R1	(2,6)	(1,5)	(1,0)
R2	(0,9)	(0,12)	(0,12)
R3	(2,60)	(-5,6)	(-20,-40)

5. Following a touchdown, the Ravens prepare to kickoff to the Patriots. The Ravens are down by 5 points with 3 minutes to play and no timeouts remaining. They must decide to try a short (onside) kick or kick it deep. The Patriots must decide whether to keep their kick return specialists on the field or bring on their sticky handed receivers. With the regular return team in, a deep kick off gives the Ravens a 20% chance of winning the game, an onside kick gives them a 40% chance. With the receivers in, a deep kick gives them a 30% chance of winning and an onside kick gives them a 10% chance of winning.
- Describe this situation as a two by two matrix game.
 - Find a mixing strategy for the Ravens that gives them the same chance of winning whether the Patriots use the regular return or the receivers.
 - Find the mixing strategies for each team that yield the minimax and maximin probabilities of winning.