

Philosophy 4300: Decision Theory
Spring 2019

Homework 5 – due in class on Friday, April 19th. [Yes, this is very soon. If you need a few extra days, that is okay. But note that there is no class on Monday, April 22].

You should feel free to work with others on this homework and to talk to me about it. However, any work you produce must be your own.

1a) Produce a table for a non zero-sum two player game where ROW and COLUMN both have dominant strategies,

1b) Produce one where ROW has a dominant strategy but COLUMN does not,

1c) Produce one where COLUMN has a dominant strategy but ROW does not.

1d) Produce a table for a two player game where there are no pure strategy Equilibria.

2) Is it possible to have a two player game where 1) at least one player has a dominant strategy and 2) there are no pure strategy Equilibria? Either produce a table for such a game or give some argument that there can't be one.

3-5) Use dominance reasoning to solve the following zero-sum games. Describe how you got your answer by stating which rows and columns you are eliminating in which order and why.

3)

	C1	C2
R1	1	3
R2	2	4

4)

	C1	C2	C3
R1	2	1	2
R2	2	2	3
R3	1	6	4

5)

	C1	C2	C3	C4
R1	1	1	3	4
R2	6	0	4	2
R3	3	1	2	0
R4	4	0	3	2

6) Find all of the pure strategy Equilibria of this game.

	LL	LM	RM	RR
TT	1, 1	2, 0	2, 3	2, 2
TM	5, 0	3, 2	0, 1	1, 3
BM	3, 0	4, 1	0, 0	3, 1
BB	2, 3	1, 3	1, 2	3, 4

7) Find all of the Equilibria (pure and mixed strategies) of the following game:

	L	R
T	1, 0	0, 1
B	0, 2	2, 0

7b) When both players are playing the mixed strategy that leads to the mixed strategy Equilibrium, what are each of their expected payoffs?

8) Find all of the Equilibria (pure and mixed strategies) of the following game:

	L	R
T	-10, -20	15, 5
B	1, 30	5, 10

8b) When both players are playing the mixed strategy that leads to the mixed strategy Equilibrium, what are each of their expected payoffs?

9) Do Resnik's problem 4 on page 147. By "represent my situation" Resnik means produce a decision table and explain what all of the numbers mean.

10) Do Resnik's problem 3 on page 150.