

# Behavioral Economics

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Homework 4

**Due** Tuesday 10th March

PLEASE ANSWER QUESTIONS 1 AND 2 ON SEPARATE SHEETS

**Question 1** Consider the following two player game

	Column Player	
Row Player	In	Out
In	$a, b$	$0, 0$
Out	$0, 0$	$-1, -1$

The row player can choose to play either ‘In’ or ‘Out’, as can the column player. The table tells you the outcome for each player (row player first) depending on the strategy of both (so for example, if both row player and column player play ‘Out’, then both receive -1).  $a$  and  $b$  represent real numbers.

Consider the level  $k$  model we discussed in class. Assume that level 0 players play ‘In’ 50% of the time and ‘Out’ 50% of the time. Remember that level 1 players best respond to level 0 players and level 2 players best respond to level 1 players.

1. Find values for  $a$  and  $b$  such a level 1 column player will play ‘In’
2. Find values for  $a$  and  $b$  such a level 1 row player will play ‘In’
3. Find values for  $a$  and  $b$  such a level 2 column player will play ‘In’
4. Find values for  $a$  and  $b$  such a level 2 row player will play ‘In’
5. Find values for  $a$  and  $b$  such that a level 2 row player playing against a level 2 column player will play strategies that also form a Nash Equilibrium

6. Find values for  $a$  and  $b$  such that a level 2 row player playing against a level 1 column player will play strategies that also form a Nash Equilibrium

**Question 2** As a first stage towards your end of year project, come up with three ideas of areas that you might like to do research in. For each, write one paragraph that highlights a question that you would be interested in answering, and why you think it is interesting. These questions can come from any of the material that we have covered so far, or any of the topic areas that we are going to cover. You are welcome to work in groups of up to 3 on these ideas