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Economics 201B: Game Theory Problem Set (#1)

Static Games

For each of the following games find 1) all weak and strict dominant strategy equilibria
 2) apply iterated **strict** dominance 3) find all pure and mixed Nash equilibria 4) indicate which Nash equilibria are trembling hand perfect and why

a)

2,1	0,0
0,0	1,2

b)

6,6	0,7
7,0	1,1

c)

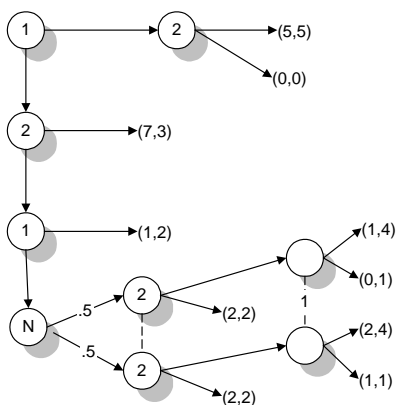
3,3	2,2	1,1
2,2	1,1	0,8
1,1	8,0	0,0

d)

1,3	1,3
0,0	2,0

Dynamic Games

In the game below find 1) the normal form 2) all pure and mixed Nash equilibria 3) all subgame perfect equilibria



Dominance and Nash Equilibrium

Prove that a profile is a Nash equilibrium of a game if and only if it is the Nash equilibrium of the game in which strategies have been removed by iterated strict dominance. Prove that a Nash equilibrium of a game in which strategies have been removed by iterated weak dominance is a Nash equilibrium of the original game. Give an example of a Nash equilibrium of a game that is not a Nash equilibrium of the game where strategies have been removed by iterated weak dominance.

Backward Induction

There are five pirates with names 1,2,3,4,5. They have just seized a hundred gold coins, and now it's time to share the loot. The bargaining rules are: Whoever has the lowest number as a name must propose an division of the one hundred coins to the remaining pirates. If the majority accepts the proposal, then the coins are allocated and the game ends. If the majority does not accept, then the proposer gets thrown overboard and the game is repeated with one less pirate. What should the first pirate propose?

Correlated Equilibrium

Consider the game

0,0	2,1
1,2	0,0

Show that the correlated strategy profile

1/3	1/3
1/3	0

is in fact a correlated equilibrium