

Advanced Microeconomics, Spring 2021

Problem set 2 due April 23

1. Consider the two-player game whose extensive form representation (excluding payoffs) is depicted in Figure 1.
 - (a) Show that for any behavior strategy that player 1 might play, there is a realization equivalent mixed strategy; that is, a mixed strategy that generates the same probability distribution over the terminal nodes for any mixed strategy choice by player 2.
 - (b) Show that the converse is also true: For any mixed strategy that player 1 might play, there is a realization equivalent behavior strategy.
 - (c) Suppose that we change the game by merging the information sets at player 1's second round of moves (so that all four nodes are now in a single information set). Which of the two results in (b) and (c) still holds?
2. For the game given below:

		Player 2			
		B1	B2	B3	B4
Player 1	A1	(0, 6)	(3, 1)	(2, 0)	(3, 7)
	A2	(1, 0)	(9, 4)	(0, 12)	(1, 1)
	A3	(0, 0)	(10, -1)	(2, -3)	(0, 1)
	A4	(7, 3)	(0, 0)	(5, 1)	(-1, 2)
	A5	(2, 8)	(-2, 1)	(3, 1)	(1, 0)

- (a) Does any player have any dominated strategies? If yes, what are they?
 - (b) Find all pure strategy NE of the game.
 - (c) Does the game have any mixed strategy NE? If yes, please find the mixed strategy NE.
3. For the game depicted in Figure 2:
 - (a) Determine all SPNE of this game;
 - (b) Determine all (pure strategy) sequential equilibrium of this game.
4. For the game depicted in Figure 3:
 - (a) Determine all pure strategy normal-form perfect equilibrium of this game;

(b) Determine all pure strategy sequential equilibrium of this game.

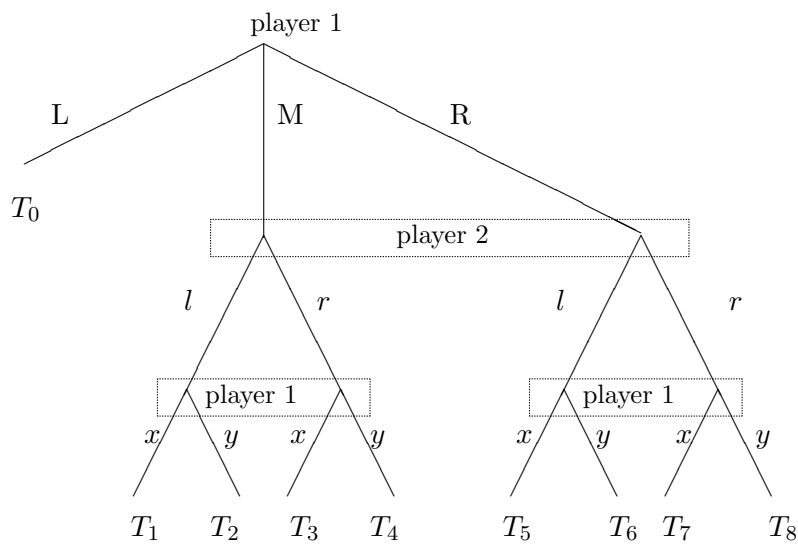


Figure 1

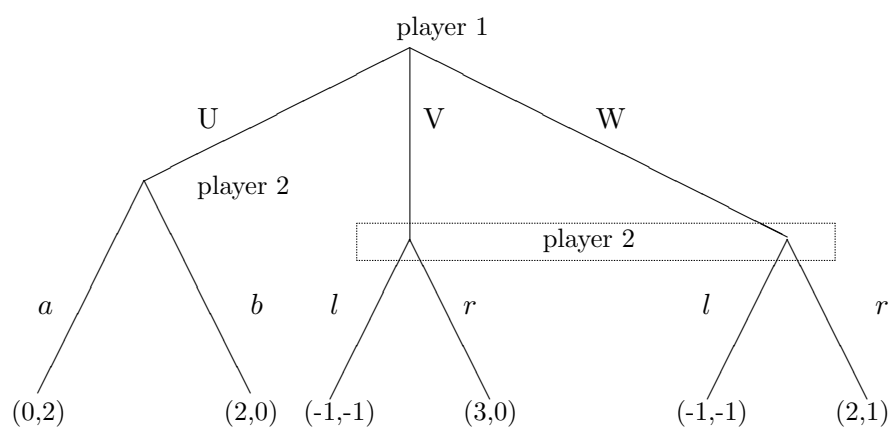


Figure 2

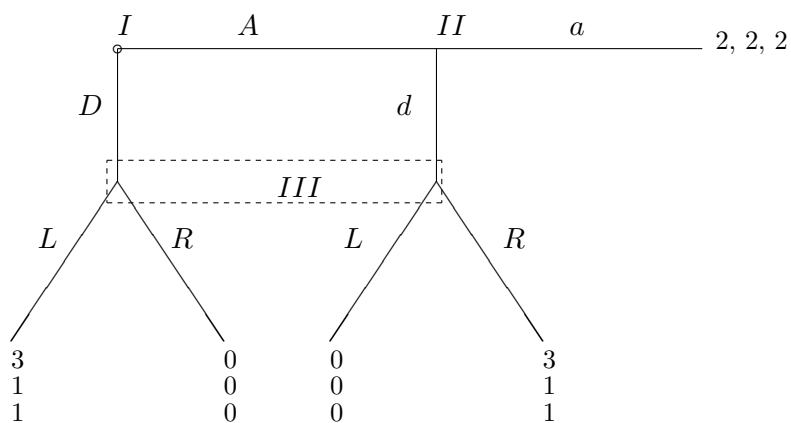


Figure 3