

Microeconomic Theory II
Midterm Exam

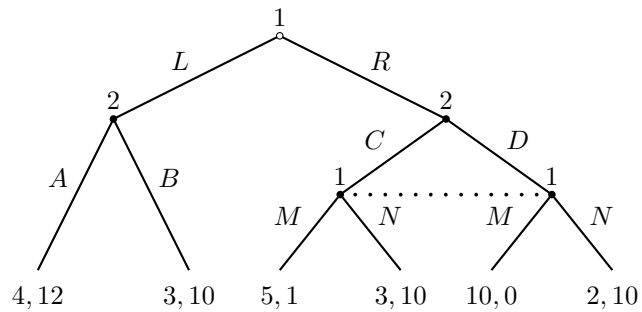
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Question 1. Consider the following game.

		Player 2			
		<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
Player 1	<i>M</i>	8, 0	2, 4	500, 1	20, 1
	<i>N</i>	4, 4	16, 0	8, 1	10, 0
	<i>O</i>	8, 3	1, 100	12, 50	30, 90
	<i>P</i>	2, 10	15, 10	5, 10	40, 9

- (a) What strategies survive the iterated deletion of strictly dominated strategies? For each iteration, specify the dominated strategy and the strategy that dominates it.
- (b) What is the unique Nash equilibrium of this game?
- (c) Imagine that this game is repeated twice with the outcome of the first stage observed by both players before the second stage. What is the maximum expected payoff Player 1 can earn in the first stage of any subgame perfect equilibrium of the twice-repeated game? Explain.

Question 2. Consider the game below. The dotted line represents an information set.



- (a) List all subgame-perfect Nash equilibria.

Question 3. Two firms compete in a differentiated-products Cournot market. In the first period, firm 1 selects a level of differentiation, $d \in [0, 1]$. In the second period, both firms (after both observing d) simultaneously select quantities, $q_i \geq 0, i \in \{1, 2\}$.

Inverse demand for firm i given its quantity choice, q_i , and that of the other firm, q_j , is given by:

$$p_i(q_i, q_j) = 1 - q_i - (1 - d)q_j$$

And firm i 's profit is given by $p_i q_i$ (there are no costs of production).

- (a) Find the subgame perfect Nash equilibrium of this game.
- (b) If increasing d comes at a cost, what is the most that firm 1 would be willing to spend to increase d from 0 to 1? Explain intuitively.