Microeconomic Theory II

Spring 2017

Midterm Exam

Mikhael Shor

Question 1. Consider the normal form game below.

	Player 2			
	A	B	C	D
M	$50, 10$	$58, 20$	$50, 7$	$50, 13$
N	$40, 5$	$72, 10$	$40, 20$	$32, 12$
O	$50, 28$	$58, 20$	$60, 10$	$56, 30$
P	$30, 18$	$64, 20$	$30, 15$	$40, 15$

Player 1 labels rows M, N, O, P.

- Is this game dominance solvable? For each step, carefully state and demonstrate which strategies are dominated and which are not.

Question 2. Consider the extensive form game below. The dotted lines represent information sets.
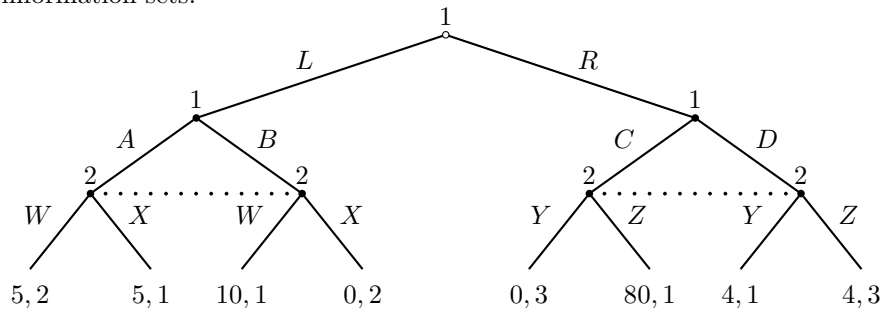
(a) Write down or describe the set of all *pure* strategies for each player.

(b) Find *all* subgame-perfect Nash equilibria.

Question 3. Consider a market consisting of a single manufacturer and two retailers. First, the manufacturer sets a wholesale price, w; Second, the two retailers observe w and simultaneously decide on production quantities, q_1 and q_2, which they must purchase from the manufacturer. That is, the two retailers are Cournot competitors with marginal cost w.

The market price is given by $p(q_1, q_2) = 1 - q_1 - q_2$. A retailer's profit is given by $(p - w)q_i, i \in \{1, 2\}$, and the manufacturer's profit is given by $(q_1 + q_2)w$. Each firm is profit maximizing.

- Find the subgame-perfect Nash equilibrium.

Question 4. Imagine that the game below is repeated twice, with the outcome of the first stage observed prior to play in the second. A player's total payoff is the sum of the payoffs of the two periods.

Player 2

		A	B
Player 1	X	1, 1	0, 0
	Y	0, 0	0, 0

- Does there exist a subgame-perfect Nash equilibrium in which players put strictly positive probability on each strategy in stage 1?

[**Note:** you are not being asked to specify an SPNE or to provide a long solution. A *yes* or a *no* with a few sentences of explanation should suffice.]