

Midterm Exam: Economics 101

You have one hour and fifteen minutes. Do all 3 questions; each have equal weight. Use two bluebooks. Put the answers to questions 1 and 2 in one bluebook, and the answer to question 3 in the other. Good luck.

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1. Short Answers

For each of the normal form games below, find all of the Nash equilibria. Which are Pareto Efficient?

a)

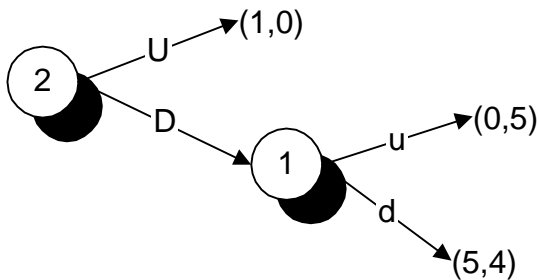
	L	R
U	10,5	11,0
D	5,3	12,5

b)

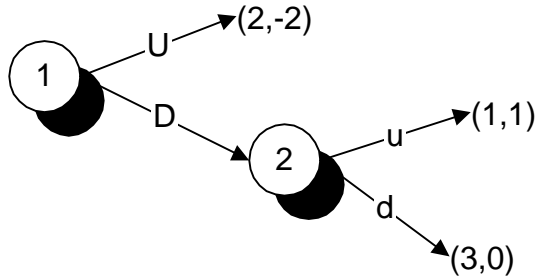
	L	R
U	3,1	2,9
D	7,-1	1,-3

For each of the extensive form games below, find the normal form and all Nash equilibria. Then find all of the subgame perfect equilibria. Which are Pareto Efficient?

c)



d)



2. Hotelling Duopoly

Linearville is a small town located on the line segment between 0 and 1. Consumers are spread evenly along this line segment. There are two grocery stores in town, one located at each end of the town. Marty's Fancy Groceries is located at 0 and can produce groceries at a marginal cost of 2; Ginnie's Low Cost Groceries is located at 1 and can produce groceries at a marginal cost of 1. (PLEASE NOTE THAT THE FIRMS DO NOT HAVE THE SAME MARGINAL COST.) Consumers must purchase groceries from one of the two stores. They receive a utility of $-p-x$ where p is the price charge for groceries at the store from which they purchase, and x is the distance they must travel to the store.

- For given prices p_1, p_2 of the two stores, which location is exactly indifferent between the stores?
- What is the demand for Marty's groceries? For Ginnie's?
- What are the Nash equilibrium prices of the price-setting game?

3. How to get a job?

J. Junior Job Candidate must decide whether to work hard in college, or to be lazy. It costs 20 units of utility to work hard in college, and 0 to be lazy. Later in life, JJC must decide between getting an MBA and becoming a surfer dude. Later in life, if he becomes a surfer dude, he gets 10 units of utility and the game ends. If JJC goes for the MBA, S.

Senior Job Recruiter must decide whether or not to offer JJJC a job. SSJR can know that JJJC got the MBA, but has no way of knowing whether JJJC applied himself in college. If JJJC gets the job, he receives a salary worth 5 units of utility. If he worked hard in college, he also receives a bonus worth 35. If he doesn't get the job he gets nothing. (Can't go back and be a surfer dude now.) **Please note that any utility received later in life should be added to utility received when in college.** SSJR gets 0 if JJJC doesn't get the MBA, or if he doesn't offer JJJC the job. SSJR gets 10 if he hires a person who applied himself in college, and -10 for employing a dud (someone who didn't work hard in college).

- a) Find the extensive form of this game.
- b) Find the *reduced* normal form of this game. Find all Nash equilibria of this game.
- c) Which of the Nash equilibria are Pareto Efficient and which are not?
- c) Apply the theory of iterated weak dominance to this game.