

Problem Set 5
HONORS 259L

Due December 4 electronically or in class.

1. Suppose 5 sawmill owners are bidding to acquire a plot of timber land from the U.S. Forestry Service. The profits (without counting their bid payments) they expect to gain from the plot are given in the following table:

	SM1	SM2	SM3	SM4	SM5
Profit	\$1M	\$1.25M	\$3.35M	\$3M	\$2.5M

You should assume that all bidders know everyone's expected profits.

- i) Suppose that bidder SM1, for whatever reason, acquired the plot. What incentives for the other owners arise assuming SM1 could resell?
 - ii) What would be the equilibrium bids and the outcome of the auction in a second-price auction? Would there be an incentive to resell?
 - iii) Suppose the plot was sold by first price auction. For bidder, SM3, let B be the highest of the other bids. Assuming bids are allowed in increments of \$100,000 what would SM3's best response bid be to that?
 - iv) Suppose the plot was sold by first price auction. What bid amounts represent dominated strategies for SM4?
 - v) Suppose the plot was sold by first price auction. What would be an equilibrium bid and outcome?
 - vi) Suppose that bidders SM1, SM2 and SM5 were not present. How would the equilibrium outcomes change in either a first price or a second price auction?
 - vii) Suppose that bidder SM4 only was not present. How would the equilibrium outcomes change in either a first price or a second price auction?
2. For each of the following auctions, explain whether you think they are more appropriately described as private value or common value. Give explanations for your reasoning.
- i) Bidding by book publishers for Donald Trump's new memoir.
 - ii) Bidding to supply a local school board with milk for school lunches.
 - iii) Bidding by major league baseball teams in Japan and the U.S. to sign a promising new pitching prospect.
 - iv) Bidding at an art auction for a new painting that will hang in someone's living room.
 - v) Bidding to supply one hundred thousand new uniforms to the U.S. Army

3. A committee to select a commencement speaker consists of five people. The following table indicates the preferences of five people for the four different choices they are considering:

	John	Alice	Robert	Beth	Carol
Donald Trump	1	4	4	4	2
Malala Yousafzai	4	3	1	3	1
Chris Rock	3	2	2	1	4
Hilary Clinton	2	1	3	2	3

Lower numbers indicate higher preferences.

- i) Does a Condorcet cycle exist in this profile of preferences?
 - ii) Construct a Condorcet rule voting system and describe who would be the winner assuming voters voted sincerely according to their preferences.
 - iii) Construct a Borda scheme voting system. (Voters give 4 votes for their favorite candidate, 3 for their next favorite, etc. and the candidate with the most votes wins.) Determine who would win if voters voted sincerely. If voters voted sincerely, is there at least one voter who would prefer to vote insincerely?
4. Consider an alternating offer bargaining game where two agents bargain over the division of a basket of six chocolate bars. In each round, one player makes an offer of how to divide, the other player either accepts and the game ends with that division, or the player rejects and either the game ends or it goes to another round where the roles are reversed. There are two possible games. In game 1, there are at most two rounds. If no agreement is reached in the first round, the number of chocolate bars is reduced by 3. If no agreement is reached in the second round, the number is reduced by 3 again so the game ends. In game 2, there are 6 rounds, in each round, if no agreement is reached, the number of bars is reduced by one.
- i) Determine the subgame perfect (back to front) equilibrium of each game