CPT302 Week 9 In-Class Exercises with Solutions

Name and Surname:_____

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Q1. Consider the statement: "Bidding one's own valuation in a Vickrey auction is the dominant strategy for a rational agent.". If you think the statement is true, show that statement is true. Otherwise, give a counter-example to show the statement is false.

Ans:

Yes. We consider agent A with (true) valuation v of the good that is being auctioned . Suppose A bids $w < v$, then some other agent might win the auction with a bid x such that $w < x < v$ and will have to pay a price of at most x, i.e. A lost the auction although he would not have paid more than v which is irrational . Now , suppose A bids $w > v$, then w might be the highest bid and the second highest bid might be x where $w > x > v$ so that x becomes the buying price for A, so that he will have to pay more than v and, hence, lose money.

Since both bidding below and above A's true valuation v are not rational v remains as the only rational choice.

Q2. Briefly comment on the English, Vickrey, first-price sealed bid, or Dutch auction protocols which guards better against bidder collusion.

Ans:

Basically, none of the protocols is fully collusion proof: bidders can always reach an agreement to keep prices artificially low. The English and Vickrey auctions are actually even worse than the Dutch or first-priced sealed bid protocols, since some collusion agreements are self-enforcing. This can be seen from the following example: let bidder A have valuation 20 for the good to be auctions while all others have valuation 18. The bidders can agree to bid 5 while A bids 6. In the English auction, if they do not keep their promise and bid more than 5 A can observe this and continue bidding until reaching 20. In the Vickrey auction, A can safely bid 20 since he will get the item at the price of 5 anyway, and no bid between 5 and 18 would win the auction, so the remaining agents have no incentive to bid in that range.