

Algorithmic Game Theory

Winter Term 2020/21

Tutorial Session - Week 7

Exercise 1:

Consider the following single-item auction: Each bidder reports a bid $b_i \geq 0$. The bidder with the highest bid wins the item and pays *half* his bid.

- (a) Show that if we only consider two bidders and valuations are drawn uniformly from $[0, 1]$, then truthful bidding is a Bayes-Nash equilibrium.
- (b) Show that this mechanism is not dominant-strategy incentive compatible.

Exercise 2:

Consider a single-parameter problem and let f be the function that maximizes $\sum_i b_i x_i$ among all $x \in X$ (declared welfare). Show that f is monotone.