

Exercise 14.1: Expected Payment

Recall

- allocation rule: $x(v) = \Pr[\text{bidder wins with value } v]$
- can view $x(\cdot)$ as cumulative distribution function of random price.

Exercise 14.1: Expected Payment

Setup:

- allocation rule $x(v) = v$

Questions:

- what is expected price offered to the bidder?
- what is expected payment of bidder with value $v = 1/2$?

Lecture 14: Revenue Maximization and Learning

Course work:

- Quiz 1, Weeks 1-3, due tonight.
- Project 4 assigned tonight.

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- revenue of auctions (cont).
- virtual values.
- truthfulness and the revelation principle.
- optimization of truthful auctions.

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Last Time:

- revenue of auctions (cont).
- virtual values.
- truthfulness and the revelation principle.
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Today:

- optimization of truthful auctions (cont).
- optimal first-price auctions.
- learning to price.
- learning to auction.

Exercise 14.2: Selling Introductions

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Setup:

- you are selling introductions
- two bidders, values $U[0, 1]$
- your mechanism either
 - 1 introduces bidders to each other
 - 2 does not introduce them
- design a truthful mechanism to maximize your revenue.

Questions: What is outcome (introduce or not) in the revenue optimal mechanism when

- $v_1 = 0.9$ and $v_2 = 0.2$?
- $v_1 = 0.8$ and $v_2 = 0.1$?
- $v_1 = 0.6$ and $v_2 = 0.6$?