

Some practice questions

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Matching pennies to decide who is player 1

- In the poker game discussed in class, it matters who is player 1.
- Suppose two players first play a round of “matching pennies” to determine who gets to be player 1, and then play the game.
- Model the whole game as an extensive-form game and solve for subgame-perfect equilibrium.

Many equilibria

- Can you create an $n \times n$ game that has $2^n - 1$ Nash equilibria?

Correlated beats unique pure Nash

- Can you create a game that has
 - a unique Nash equilibrium, which is a pure-strategy equilibrium, and
 - another correlated equilibrium that is better for both players

Confusing profiles of votes

- For an arbitrary number n of alternatives, can you come up with a profile of votes such that...
- The Borda ranking is the opposite of the plurality ranking?
- The Copeland ranking is the opposite of the plurality ranking?
- Etc.

Generous Groves

- For a combinatorial auction, can you create a Groves mechanism so that every bidder always *receives* a nonnegative payment?

False-name bidding

- Suppose there are three bids already:

$(\{A,B\}, 1)$ $(\{A,C\}, 1)$ $(\{C,D\}, 1)$

The auction mechanism is the GVA.

Can you win everything for free with only two bids?

- Now suppose there are four bids

$(\{A,B\}, 1)$ $(\{A,C\}, 1)$ $(\{A,D\}, 1)$ $(\{C,D\}, 1)$

Can you win everything for free with only two bids?

Mixing necessary to get commitment benefit

- Can you create a game where
 - committing to a pure strategy hurts (is strictly worse than the simultaneous-move solution), but
 - committing to a mixed strategy helps (is strictly better than the simultaneous-move solution)?