CPS 296.1
Some practice questions

Vincent Conitzer
conitzer@cs.duke.edu

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 x 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

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)?

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?