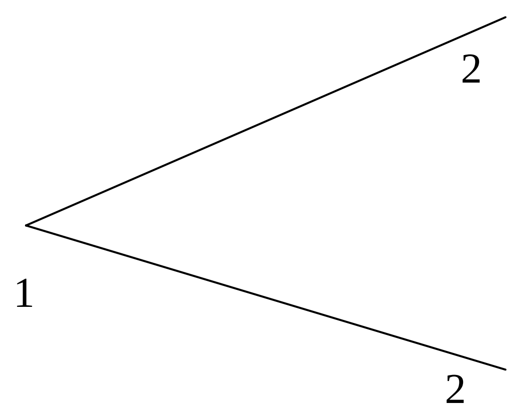
Final Exam December, 2010
HONORS 259L

1. [10 points] Use techniques we developed in class to find all of the pure strategy Nash equilibria of this game. This is a three player game. Player one selects one of the two boxes and players two and three play row and column respectively. Players two and three know which box is selected but they choose row and column simultaneously. The payoffs show first player one, then player two then player three. (Hint: use a combination of solving for Nash Equilibrium and back to front reasoning.)




3

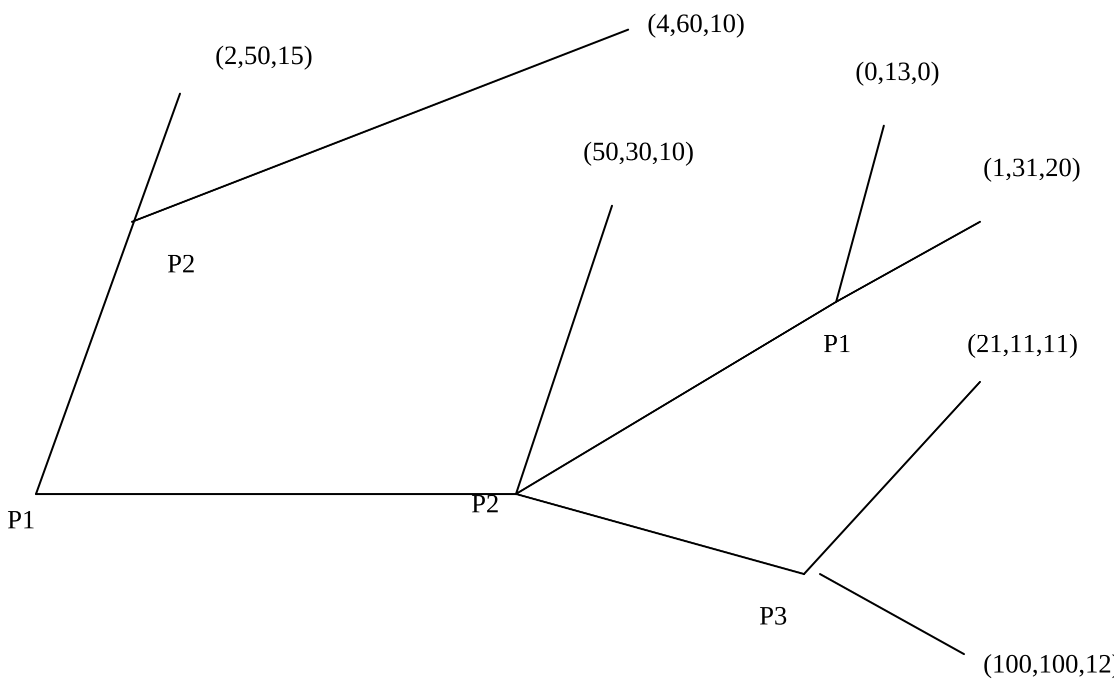
| | C1 | C2 |
|---|---|---|
| R1 | (0,0,0) | (2,3,7) |
| R2 | (6,2,0) | (1,2,1) |

3

| | C1 | C2 |
|---|---|---|
| R1 | (10,0,0) | (2,-2,-2) |
| R2 | (1,5,3) | (5,5,2) |

2. [10 points] Inside of a dark closet are five hats: three blue and two red. Knowing this, three smart men go into the closet, and each selects a hat in the dark and places it unseen upon his head. Once outside the closet, no man can see his own hat. The first man looks at the other two, thinks, and says, “I cannot tell what colour my hat is.” The second man hears this, looks at the other two, and says, “I cannot tell what colour my hat is either.” The third man is blind. The blind man says, “Well, I know what colour my hat is.” What colour is his hat?
3. [10 points] Identify two to four concepts that we developed in class that were useful in producing your class project. Explain what the concept was and how you used it.
4. [20 points] Suppose an auctioneer uses an English auction to sell a painting. The auctioneer starts at a price of zero and raises it by $100 every time two or more bidders indicate by raising their paddle that they are willing to pay that price. There are three bidders, bidder one with a value of $1400 for the painting, bidder two with value of $2100 and bidder three with value of $800. Determine the equilibrium price (or as close to it as you can) of this auction.

5. [5 points] Use back to front reasoning to solve for the equilibrium outcome of this game. The payoffs show first player 1's payoff, then player 2 and then player 3.




6. [15 points] In the matrix game below, let *q* be the probability that Column player chooses C1 (and of course, *1-q* is the probability she chooses C2). Assuming that players want to maximize the average (or expected) value of their payoffs, for what values of *q* is R1 a best response for Row player and for what values of *q* is R2 a best response? When is Row player just indifferent? (Row player payoffs are shown first).

| | C1 | C2 |
|---|---|---|
| R1 | (0,25) | (3,0) |
| R2 | (10,0) | (0,15) |