Youngberg

Econ 304—Bethany College

**Homework 03**

Answer all the following on a ***typed, stapled*** (if applicable)separate sheet of paper. Make sure that you justify your answers, use your own words, and show your work. All questions are equally weighted.

1. Using backward induction, solve the following game. Show your work.

Ray

2,4

Big

Small

Frank

4,2

4,1

1,4

High

Low

Low

Frank

High

1. Does the game from the previous question have a mover advantage? If so, what? Show your work.
2. Consider the Neanderthal, Oog, and the *homo sapien*, Vladimir. When they see each other, they can get a weapon ready or show some items to trade. Of course, showing an item to trade (or showing that you are unarmed) puts you at a disadvantage in combat. Find Nash Equilibrium and any dominant strategies. Indicate if the strategies are strictly or weakly dominant and justify your answer.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Oog** | |
|  |  | *Fight* | *Trade* |
| **Vladimir** | *Fight* | -1 , -1 | 7 , -7 |
| *Trade* | -7 , 7 | 4 , 4 |

1. In class we discussed examples of a grim strategy and of a tit-for-tat strategy. Provide an additional example of each we did not use in class. Do not make them hypothetical (though an example from a novel or other fiction is fine).
2. In *A Beautiful Mind*, the story of John Nash, Nash is at a bar with several male friends. There are several brunette women and one blonde. All men prefer the blonde. Nash Equilibrium is described as:

If we all go for the blonde and block each other, not a single one of us is going to get her. So then we go for her friends, but they will all give us the cold shoulder because no one likes to be second choice. But what if none of us goes for the blonde? We won't get in each other's way and we won't insult the other girls. It's the only way to win.

This is quite possibly the worst description of Nash Equilibrium ever written. Why is this not Nash Equilibrium?