Math 7502

Homework 7

Due: March 6, 2008

1. $*$ Solve the games with payoff matrices

$$\begin{pmatrix} 1 & 4 \\ 7 & 2 \end{pmatrix}, \quad \begin{pmatrix} 3 & 6 \\ 2 & 4 \end{pmatrix}.$$

2. What happens if you solve a linear program to find the equilibrium for Paper- Scissors-Rock using the payoff matrix

$$A = \begin{pmatrix} 0 & 1 & -1 \\ -1 & 0 & 1 \\ 1 & -1 & 0 \end{pmatrix}$$

without adding a number to make all entries positive.

3. $*$ Let A be the payoff matrix for a two person zero-sum game. Show that, if $A = -A^t$, then the value of the game is 0.

4. $*$ Solve using the simplex algorithm the undercut game with payoff matrix

$$A = \begin{pmatrix} 0 & -1 & 2 & 2 \\ 1 & 0 & -1 & 2 \\ -2 & 1 & 0 & -1 \\ -2 & -2 & 1 & 0 \end{pmatrix}.$$