Stat 155 Game theory, Yuval Peres **Fall 2004**

Homework 7

Question 1: the game of chicken. Two drivers are headed for a collision. If both swerve, or Chicken Out, then the payoff to each is 1. If one swerves, and the other displays Iron Will, then the payoffs are -1 and 2 respectively to the players. If both display Iron Will, then a collision occurs, and the payoff is $-a$ to each of them, where $a > 2$. This makes the payoff matrix

II / I	CO	IW
CO	(1,1)	(-1,2)
IW	(2,-1)	(-a,-a)

Find all the pure and mixed Nash equilibria.

Question 2: In hide-and-seek with matrix (b_{ij}), suppose that $d_{ij} = b_{ij}^{-1} \in \mathbb{Z}$. Show that, in this case, the seeker has a minimal cover with integer entries.

Question 3: Solve hide-and-seek in the case where the matrix (b_{ij}) is given by

$$\begin{vmatrix} 1/5 & 1/3 & 1/2 \\ 1/3 & 1 & 1/4 \\ 1/3 & 1/7 & 1/8 \end{vmatrix}$$

Question 4: extensive form non-zero sum game. Exercise 4 on page $III - 13$ of Ferguson.