

MA 440 Homework 7

S. Schechter

October 17, 2007

1. Gintis, problem 4.25. Player 1 has three strategies (pick 1, pick 2, pick 3). Player 2 has five strategies:
 - (1) Guess 1. If told it is low, guess 2.
 - (2) Guess 1. If told it is low, guess 3.
 - (3) Guess 2. If told it is high, guess 1. If told it is low, guess 3.
 - (4) Guess 3. If told it is high, guess 1.
 - (5) Guess 3. If told it is high, guess 2.
- (a) For part (a), just do the following.
 - i. Construct the payoff matrix, and check your work on p. 420.
 - ii. Show that there are no pure strategy Nash equilibria.
 - iii. To look for mixed strategy Nash equilibria, let $\sigma_1 = (p_1, p_2, p_3)$ be a mixed strategy for player 1, and let $\sigma_2 = (q_1, q_2, q_3, q_4, q_5)$ be a mixed strategy for player 2. Find a Nash equilibrium in which all player 1's strategies are active, and only player 2's second, third, and fourth strategies are active.
 - iv. Determine whether there is a Nash equilibrium in which all player 1's strategies are active, and only player 2's first, third, and fifth strategies are active.
- (b) For part (b), find the expected payoff to player 2 from the mixed strategy Nash equilibrium you found in part (a)(iii).