

EVOLUTION AND THE THEORY OF GAMES

Exercises 31-1-2013

1. (9 points) Take the example of Big Joe and Little Joe under the banana tree (page 5 of lecture notes), and solve, if possible, for dominant strategy solutions if **(a)** Little Joe makes the first move and if **(b)** both players move simultaneously. **(c)** Suppose Big Joe decides who is going to make the first move. How would you model this situation and how would you solve it?
2. (3 points) Suppose two players interact to decide how to divide money given to them. The first player proposes how it should be divided, and the other player either accepts the offer or rejects it. If the second player rejects, neither player gets anything.

Suppose the first player has two strategies, either to (i) propose a fifty-fifty deal (a fair deal) or (ii) an unfair deal where the second player is offered only a small positive amount (i.e. less than in the fair deal). Find a dominant strategy solution by constructing a game-tree and a payoff-matrix.

3. (3 points) Solve the following game, if possible, for dominant strategy solutions:

	y_1	y_2	y_3	y_4
x_1	4 , 5	5 , 3	5 , 6	4 , 4
x_2	5 , 3	2 , 1	3 , 5	5 , 2
x_3	2 , 6	6 , 3	4 , 2	5 , 5