New York University

Department of Economics

V31.0310 C. Wilson

Strategic Game Theory February 15, 2006

Problem Set #7

(Due: Wed. Feb 22)

1. Colin and Rowena met at the tennis court. Colin has won the coin toss and is about to serve. But first he must decide whether to serve to Rowena's Forehand or to her Backhand. Rowena, who is waiting to return serve, must decide whether to prepare for a serve to her Backhand or her Forehand. The couple play with each other often and have learned that the table below gives the percentage of the time that Rowena will win the point for each pair of strategies they might adopt.

	F	B
F	90%	20%
B	30%	60%

Notice that Rowena alway does better when she correctly anticipates the direction of Colin's serve, but she is much better at returning anticipated forehands than anticipated backhands. Assuming that both players are trying to maximize the probability of winning the point,

(a) Write down a bimatrix game that they are playing.

(b) Compute the best response functions for each player and find the NE.

(c) Suppose Rowena improves her backhand so that the percentage of time she wins when she correctly anticipates that Colin will serve to her backhand rises from 60% to 65%.

i. At the new NE, does Rowena use her backhand more or less the NE than she did before?

ii. How does her NE probability of winning change?

2. In the game below

(a) Determine if any pure strategies are dominated by some mixed strategy.

(b) Use the answer to part (a) to help determine the set of NE in mixed strategies.

	R	P	S
R	0,5	2,2	5,0
P	2,2	3,1	2,2
S	5,0	2,2	0,5

3. In the game below, determine all of the NE.

	L	C	R
T	6,6	0,4	6,0
M	4,0	4,4	4,6
B	0,6	6,4	0,0