

Math 486. Febr. 3, 2011. Midterm 1 5 problems, 15 pts each.

Name _____ m1 /75. total/.....

Show your work. Write your name on the class list and on every page you submit. Return this page.

1. For every given number t , solve for x, y the system
 $x+ty=2, tx+y=-2$

$$y = \frac{2}{t-1}, x = \frac{-2}{t-1} \quad t \neq 1$$

no solution for $t=1$

2-5. Find an equilibrium and the corresponding payoff.

2. Restricted Nim. Last move wins. The bet is \$1. Two player, A and B. Players alternate. A can take 1 or 2 stones in a move from a pile. B can take 1, 2, or 3 stones in a move from a pile. A starts with one pile, 100 stones.

Player A will lose \$1

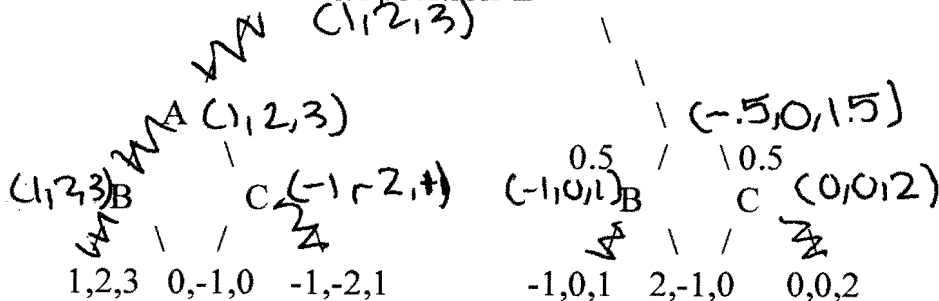
3. 2 player game in normal form.

7, 1	4, 0	-1, 3	0, 0	3, 3	-3, 4
5, -1	5, 0	-2, 5	1, 4	3, 1	0, 0
0, 4	4, -1	-2, 4	6, 0	0, 3	1, 1
1, 4	5, 0	0, 3	6, 0	3, 3	3, 3

no equilibrium

4. Extensive form, 3 players, A B, C.

initial position B



5. Game with 3 players, A, B, C in normal form.

strategy --- payoff

A B C	A	B	C
1 1 1	0	-1	1
1 1 2	1	-2	0
1 2 1	1	0	0
1 2 2	0	0	1
2 1 1	0	-1	1
2 1 2	1	-2	0
2 2 1	1	0	-1
2 2 2	-1	1	0
3 1 1	0	-1	1
3 1 2	-1	1	2
3 2 1	1	-1	0
3 2 2	-1	0	0

one equilibrium at (3, 2, 1)
 payoff 1, -1, 0