Math 484.2. December 2, 2010. Midterm 3.
5 problems, 15 pts each. Name Evan D. Reese

1--3. Solve matrix games: If you cannot find optimal strategies, give the best you can find.

1.

0△	5′	3	4	5′	3	3′
0△	1	4	5′	4	6	3′
1′	2	6′	5′	5′	7′	0△
0△	0△	1	1	4	2	0△
1′	1	4	3	2	4	0△
1′△	1△	2	1△	3	6	3′

Use △ for row min and ′ for column max
Saddle point at boxed position
Since there is a Saddle Point Value of Game = 1
An optimal strategy for the row player is $[0,0,0,0,0,1]^T$
An optimal strategy for the column player is $[1,0,0,0,0,0]$

2.

1	2	3	1	2	4	0
3	1	4	4	2	4	0
3	3	2	0	4	3	1
4	1	4	0	2	3	2
0	1	2	4	2	1	3

3.

2	0	2	-2
2	-2	-1	2
4	2	0	1

4. Solve for x, y

x+ty = 3
2x+ty=3

where t is a given number.

With Given problem we have the augmented matrix

$$\begin{bmatrix} 1 & t & 3 \\ 2 & t & 3 \end{bmatrix} \sim -2R_1+R_2 \begin{bmatrix} 1 & t & 3 \\ 0 & -t & -3 \end{bmatrix}$$

if $t \neq 0$ $y = 3/t$ and $x = 3 - yt = 3 - 3/t \cdot t = 3-3 = 0$
if $t = 0$ there are no solutions

5. Find the mean, the midrange, and the central value for the following numbers:
0,-1, 3,4,5,-1,7,0,9,0, 0, -1,-2.

Ordering the numbers we have

$-2, -1, -1, -1, 0, 0, 0, 0, 3, 4, 5, 7, 9$ there are 13 numbers

the mean is the sum of all values divided by the number of values thus

$$\text{Mean} = \frac{-2+-1+-1+-1+0+0+0+0+3+4+5+7+9}{13} = 23/13$$

$$\text{midrange} = \frac{9+-2}{2} = \frac{7}{2}$$ this is the max value + min value divided by 2

Central value = 0 Since there are 13 numbers the central value occurs at the middle i.e. the 7th number