Games theory

Theory of games + Competitive strategies

J. von. Neumann - father of games theory.

+ Based on 'minmor principle !

You should know

1. What are the characteristics of game?

2. What do you understand by 'pure strategy' and .
'mixed strategy!

3. Explain the following terms.

i) player ii) Game III) play iv) strategy

V) pure strategy VI) Mixed strategy VII) Optima) strategy

viii) Two person zero sym game 17) Zero Sym game.

+) pay off.

4. What gre the 19mitations of games theory.

5. seplain principles of dominance.

Rules for solving games theory.

1. Look for saidle point

2. Reduce the game by dominance.

3. Solve for mixed strategy

Optimum strategies for player 8 = {1,0}

and

Probe

	∞ol ne	The	Jan	play o	В	
		1	, 2	3	+	5
	,	-4	-2	-2.	83	1
AwyerA	2	1	0	-1	0	0
	3	-6	-5	- 2	-4	4
	4	3	1	-2	0	+ 8

Solution

				В			
		1	2	9	4	5	Max (win)
	1	-4	-2	-2	3	1	(-4)
	2	1	0	-1	0	0	(-1)
A	3	-6	-5	-2	-4	4	-6
	4	3	1	-6	0	-8	-8
min (u	(ar)	3	1	(-1)	3	4	Angel Marie

As mPn (max) = max (min)

Saddle point exists

· Jame value = 4= -1

Optimum stratogy for player 4 = {0, 1, 0, 0}

Optimal strategy for player 3 = {0,0,1,0,0}

Dominance properly for caloumn

Every value in the dominating coloumn(s) must be less than or equal to the corresponding value of the dominated coloumn.

+ Arg dominance for coloumna

Dominance property for sows.

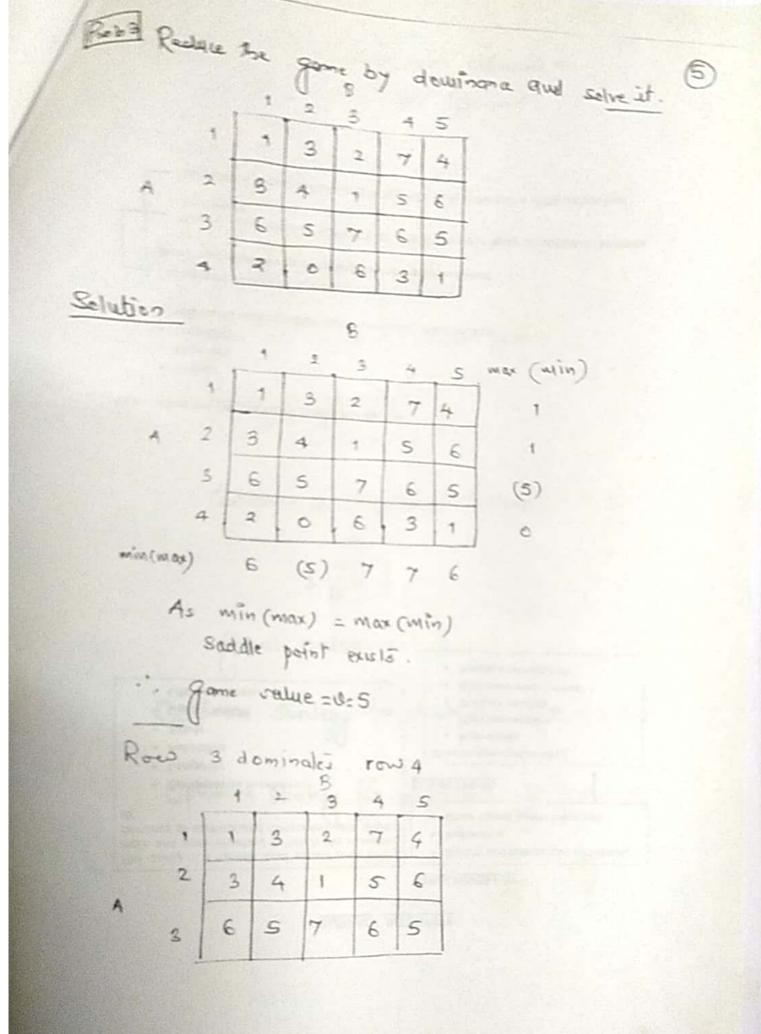
Every value in the dominating row (s) must be greater than or equal to the corresponding values of the dominated rows

+ Averge dominance for rows.

+ Any number coloumm | row can dominate any number of coloumn | row.

+ While solving game, doubt reduce the game.

by downing a a 612 2x2.



Coloumn 2 dominate Coloumn 4
Coloumn 2 dominate Coloumn 5

		1	2	3
	1	1	13	1 7
A	2.	3	4	1
	3	6	5	7

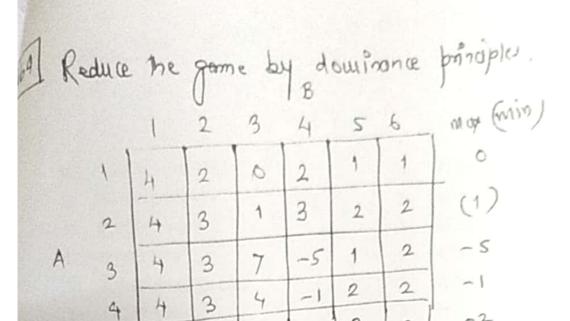
Row 3 dominated Row 1 and 2

Glooms 2 dominato Coloums 183.

.. Jame value: U= 5

Optimum stralegy for player A = {0,0,1,0}

Optimum strategy for pluyer 6 = {0,1,0,0,0}



min(max) 4 3 7 3 (2) 2

As min(max) & max (min)

There is no saddle point

Row 2 dominates Row 1

Rose 4 dominates Roses

	1	2	3	4	5	6
2 1	4	3	1	3	2	2
	10	3	7	-5	1	2
3	17	13	14	-1	2	3
4	17		1		1000	T. T.

Gle 6, 5 & 4 dominales Gl. 1 & 2

Gloumn 5 dominates Col-6

	3	4	5
2	1	3	2
3	7	-5	1
4	4	-1	9

Average of Coloumn 384 dominates Col. 5.

	2
-	1
	3/2
	T)

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

Arg. of Row 2 and 3 dominater Row 4

1	3
7	-5