

Graphical Method in Game theory

we use it to find out value of game

Ex solve the following game problem using graphical method.

		Player B					P_1
		I	II	III	IV	V	
Player A	I	-5	5	0	-1	8	
	II	8	-4	-1	6	-5	

Player A has only two strategy and Player B has 5 strategy so it is imp. for player B to choose best strategy.

Let Probability for Strategy I for player A $\text{for} = P_1$

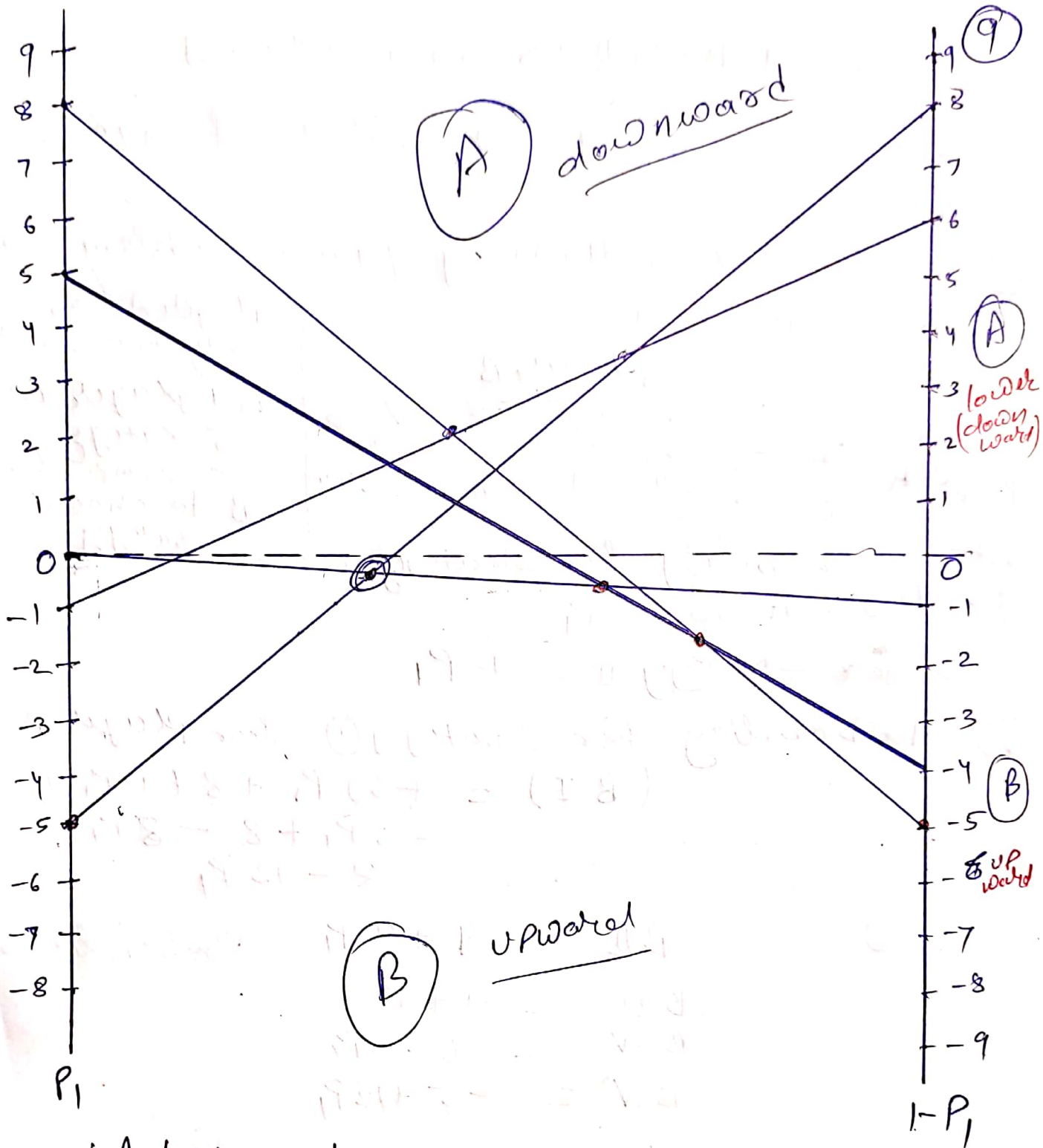
\Rightarrow for Strategy II = $1 - P_1$

ii) Probability for Strategy I for Player B

$$\begin{aligned} (B I) &= (-5)P_1 + 8(1 - P_1) \\ &= -5P_1 + 8 - 8P_1 \\ &= 8 - 13P_1 \end{aligned}$$

iii)

$$\left. \begin{aligned} B II &= -4 + 9P_1 \\ B III &= -1 + P_1 \\ B IV &= 6 - 7P_1 \\ B V &= -5 + 13P_1 \end{aligned} \right\} \text{Probabilities.}$$



Now \therefore A has only two strategy
 and B has 5 strategy.
 So, B has to choose carefully
 \Rightarrow we will solve for B.

• This point is intersection of two lines
we will find these lines

$$\begin{matrix} -5 & 0 \\ 8 & -1 \end{matrix}$$

Now, we get two row two column, now we will apply odd Method)

Now

		play B		
		I	III	
play A	I	-5	0	9
	II	8	-1	5
		13	13	14

$$8 - (-1) = 9$$

~~probability of~~

$$\Rightarrow \text{value of game} = \frac{-5 \times 9 + 8 \times 5}{14} = \frac{-5}{14}$$

Probability of play A for strategy I = $\frac{9}{14}$
II = $\frac{5}{14}$

play (B) = I = $\frac{1}{14}$
II = 0
III = $\frac{13}{14}$
IV = 0
V = 0