

Answer on Question #49664 – Math – Other

For each matrix, state the maximin for player 1(the row player). State the minimax for player 1(the column player). Is there a saddle point? Does either player do better than their strategy?

[347]

[281]

[455]

Solution

$$A = \begin{pmatrix} 3 & 4 & 7 \\ 2 & 8 & 1 \\ 4 & 5 & 5 \end{pmatrix} \begin{matrix} 3 \\ 1 \text{ row min} \\ 4 \end{matrix}$$

$4 \quad 8 \quad 7 \text{ column max}$

The maximin for player 1(the row player) is

$$\max\{3,1,4\} = 4.$$

The minimax for player 1(the column player) is

$$\min\{4,8,7\} = 4.$$

$a_{31} = 4$ is the minimum of the 3rd row, and the maximum of the 1st column, since it is a saddle point. Thus it is optimal for player 2 to choose the third row, and for player 1 to choose the first column. The value of the game is 4, and choosing the 3rd row and 1st column gives optimal strategies for both players.

If either alone departs from saddle point strategy, he will suffer unnecessary loss.