Non-zero Sum 2x2 Game (2019)

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The 2x2 game between two players, Row and Column (Figure 1), seems typical of such two-player matrix games. The entry (-3, 2) refers to the fact that if Row plays Row 2 and Column plays Column 1, then Row loses 3 and Column gains 2. Since (-3) + 2 is not zero this means that this game is not a zero-sum game.

<table>
<thead>
<tr>
<th></th>
<th>Column I</th>
<th>Column II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Row 1</td>
<td>(4, -1)</td>
<td>(-2, 2)</td>
</tr>
<tr>
<td>Row 2</td>
<td>(-3, 2)</td>
<td>(3, -1)</td>
</tr>
</tbody>
</table>

Figure 1 (A non-zero sum game)

Every time the game is played Row can have one of 4 possible outcomes as a payoff (4, -2, -3 or 3) while Column can have one of two possible outcomes as a payoff (-1 or 2)

Questions:

1. What advice would you give to the players of this game about how to play "optimally?"

Comment: You might want to compute all the Nash equilibria for this game to answer this question.

2. Do any aspects of this game come as a surprise?