


# Nash Equilibria in Mixed Strategies

Game Theory

Vincent Knight

$$\begin{pmatrix} (2, -2) & (-2, 2) \\ (-1, 1) & (1, -1) \end{pmatrix}$$

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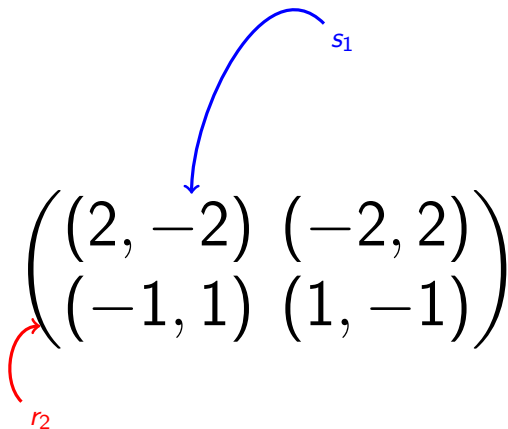
A blue curved arrow labeled  $s_2$  points from the top-right element  $(-2, 2)$  to the bottom-right element  $(1, -1)$ .

$s_2$

$$\begin{pmatrix} (2, -2) & (-2, 2) \\ (-1, 1) & (1, -1) \end{pmatrix}$$

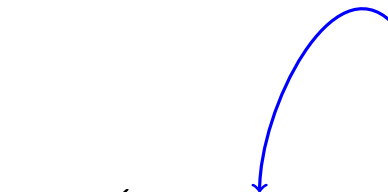
Diagram illustrating a row operation on a matrix. A red arrow labeled  $r_2$  points to the second row, and a blue arrow labeled  $s_2$  points to the second column.

$$s_2 - r_2$$



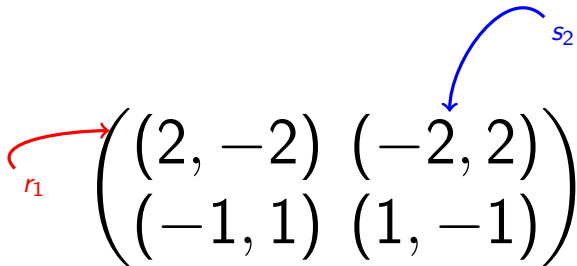
$$\begin{pmatrix} (2, -2) & (-2, 2) \\ (-1, 1) & (1, -1) \end{pmatrix}$$

$$s_2 - r_2 - s_1$$



$$\begin{pmatrix} (2, -2) & (-2, 2) \\ (-1, 1) & (1, -1) \end{pmatrix}$$

$$s_2 - r_2 - s_1 - r_1$$



$$\begin{matrix}
 & & & s_2 \\
 & & \searrow & \\
 & & & \downarrow \\
 r_1 \nearrow & \begin{pmatrix} (2, -2) & (-2, 2) \\ (-1, 1) & (1, -1) \end{pmatrix}
 \end{matrix}$$

$$s_2 - r_2 - s_1 - r_1 - s_2$$

$$u_1(r_1, \sigma_2) = 2y - 2(1 - y) = 4y - 2$$

$$u_1(r_2, \sigma_2) = -y + (1 - y) = 1 - 2y$$



$$u_1(r_1, \sigma_2) = 2y - 2(1 - y) = 4y - 2$$

$$u_1(r_2, \sigma_2) = -y + (1 - y) = 1 - 2y$$

