

Combining Matrices

Using the matrices below, which can you combine and in what order, to make the following transformations?

- Rotation of 180
- Identity
- Reflection in the y -axis
- Reflection in the line $y = -x$

Which can you make in more than one way?
Justify your answers using matrix multiplication.

$$\begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix} \quad \begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix} \quad \begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix} \quad \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$$

(Transformations in white text underneath matrices. Highlight then change font colour to see them)