

The matrix  $\begin{pmatrix} \sqrt{2} & -\sqrt{2} \\ \sqrt{2} & \sqrt{2} \end{pmatrix}$  performs a rotation of 45 degrees anti-clockwise about the origin.

The matrix  $\begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$  represents a reflection in the  $x$ -axis. The matrix  $\begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}$  represents a rotation of 90 degrees clockwise about the origin. The matrix  $\begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$  performs a reflection in the  $y$ -axis. Work out the transformation matrices for the following transformations:

Reflection in  $y$ -axis followed by rotation 45 .  
degrees anti-clockwise

Rotation of 90 degrees clockwise followed by .  
reflection in the  $x$ -axis

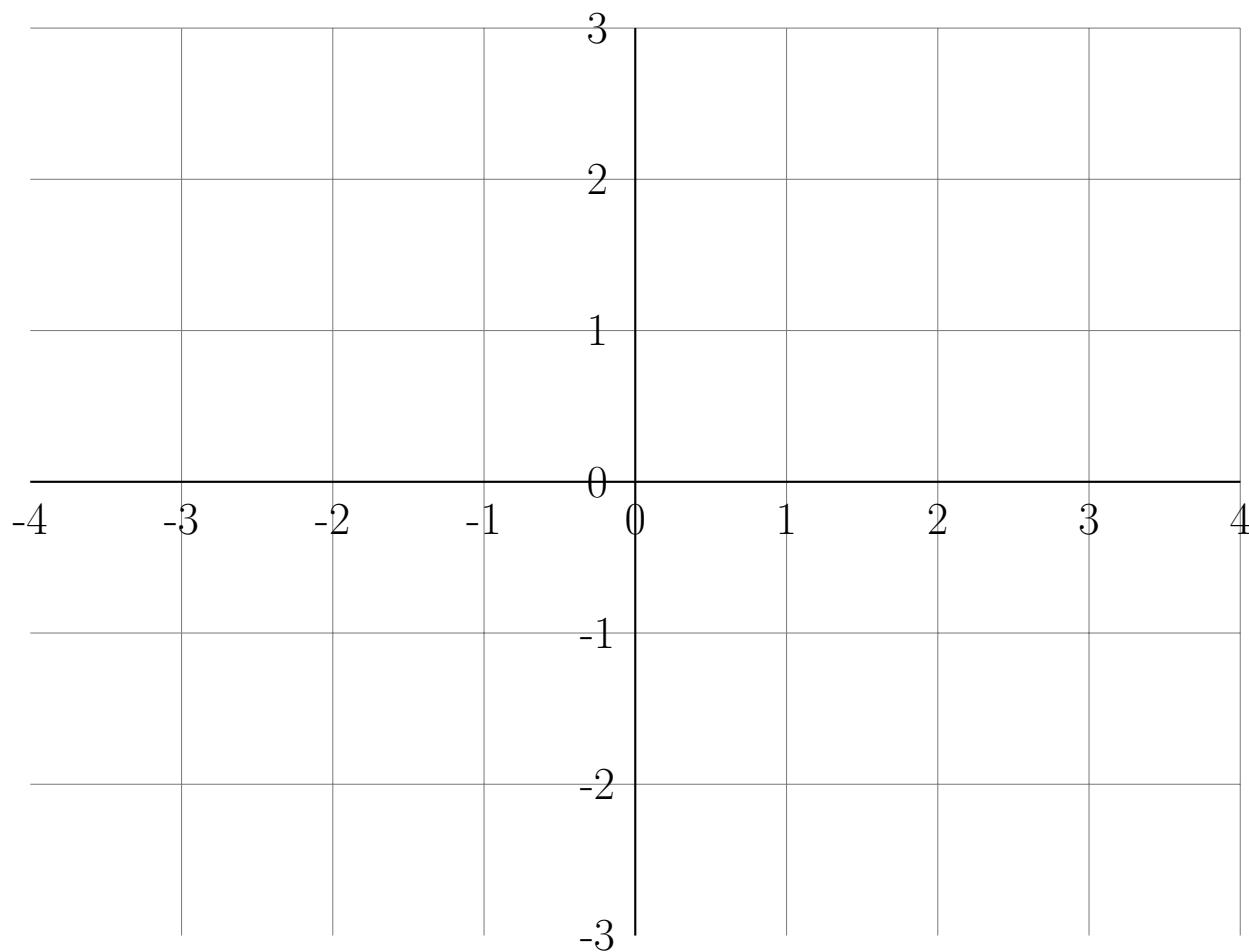
The matrix  $\begin{pmatrix} \sqrt{2} & -\sqrt{2} \\ \sqrt{2} & \sqrt{2} \end{pmatrix}$  performs a rotation of 45 degrees anti-clockwise about the origin.

The matrix  $\begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$  represents a reflection in the  $x$ -axis. The matrix  $\begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}$  represents a rotation of 90 degrees clockwise about the origin. The matrix  $\begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$  performs a reflection in the  $y$ -axis. Work out the transformation matrices for the following transformations:

Rotation of 45 degrees anti-clockwise, then  
reflection in  $x$ -axis, then rotation of 90 de-  
grees clockwise

Rotation of 90 degrees clockwise followed by  
reflection in the  $y$ -axis followed by reflection  
in the  $x$ -axis

Work out the single transformation equivalent to reflection in  $y$ -axis followed by rotation 45 degrees anti-clockwise



Work out the single transformation equivalent to rotation 180 degrees about the origin followed by reflection in  $x$ -axis

