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 .

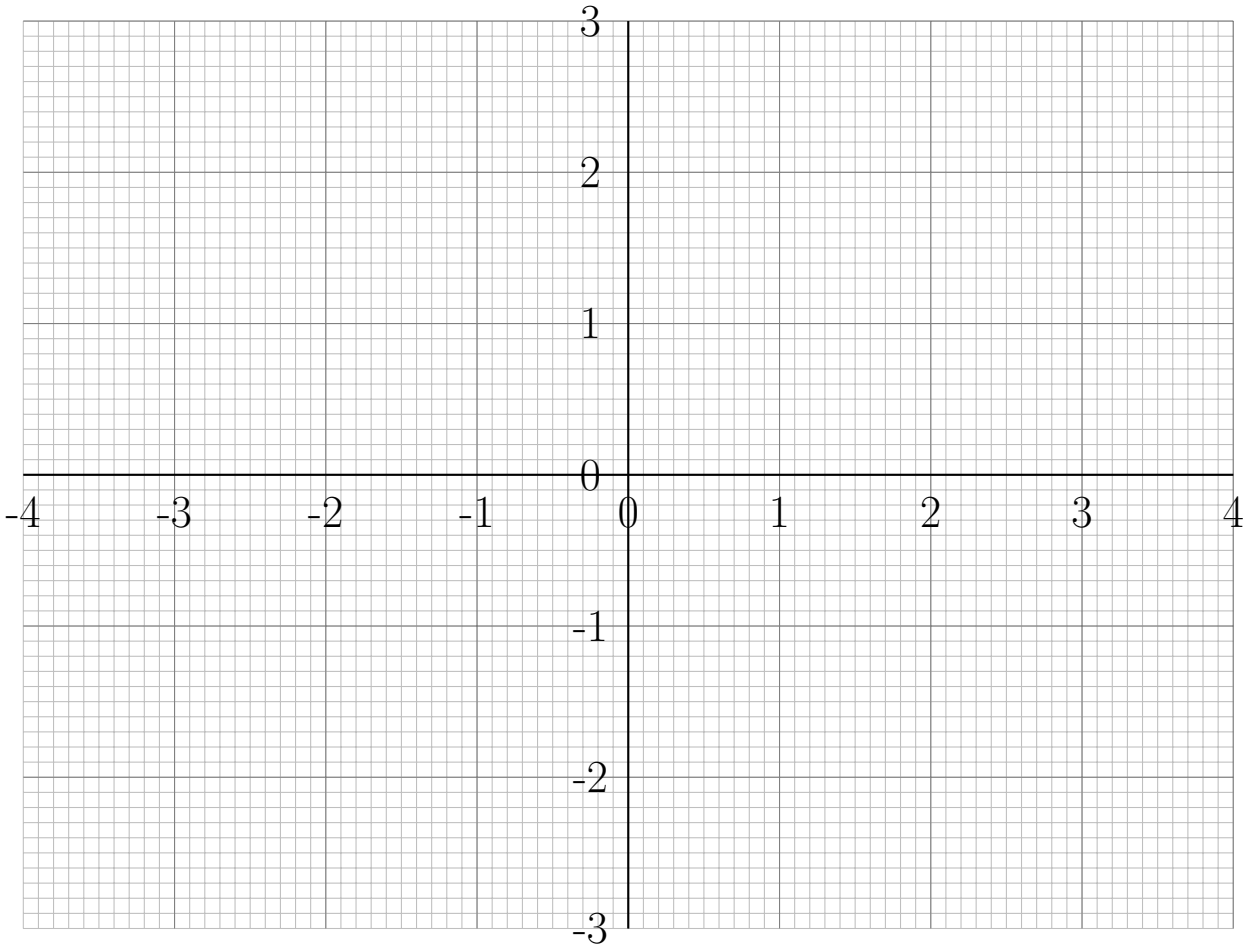
Rotation of 90 degrees clockwise followed by reflection in the x-axis .

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 degrees 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