Reflect the vector in the line $y = x$:
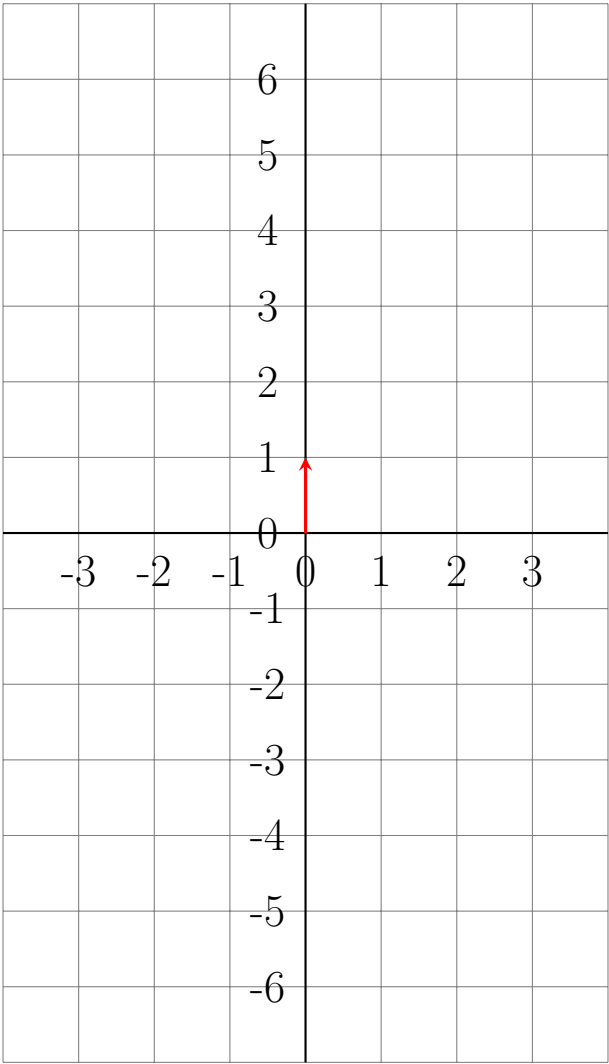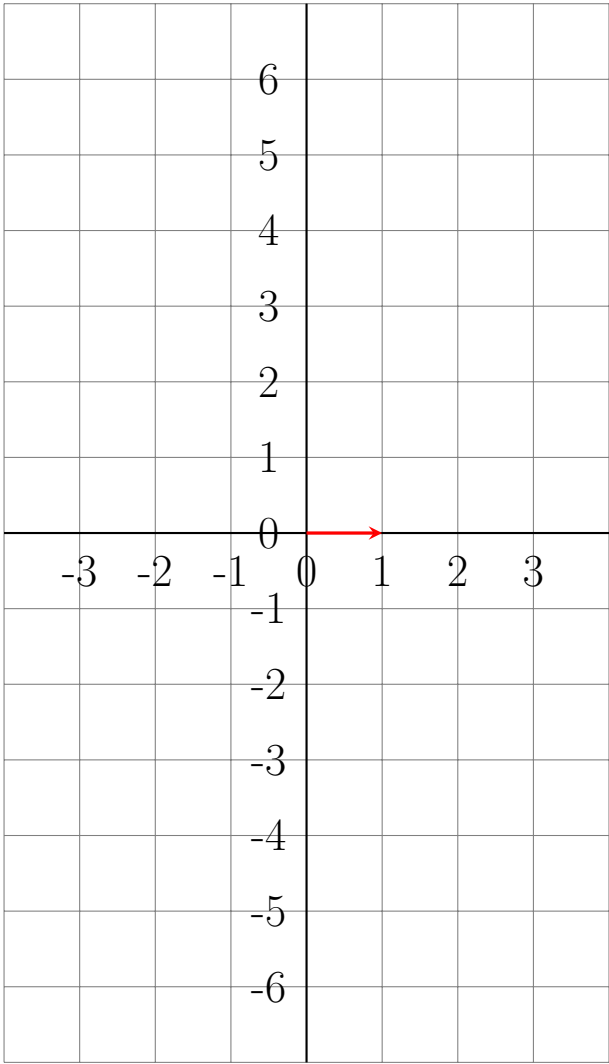
Reflect the vector in the x-axis:

Reflect the vector in the y-axis:
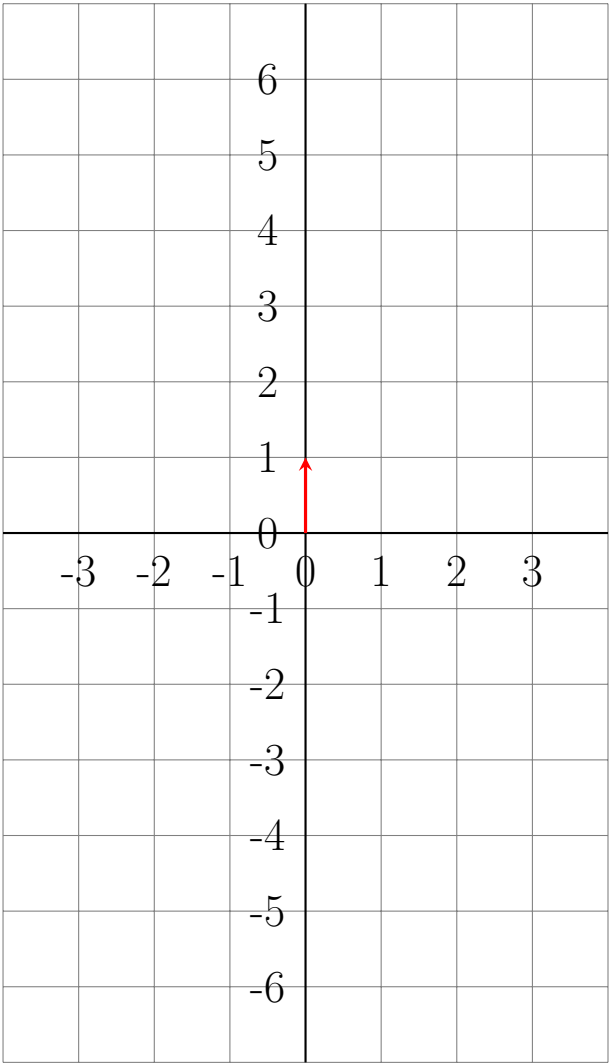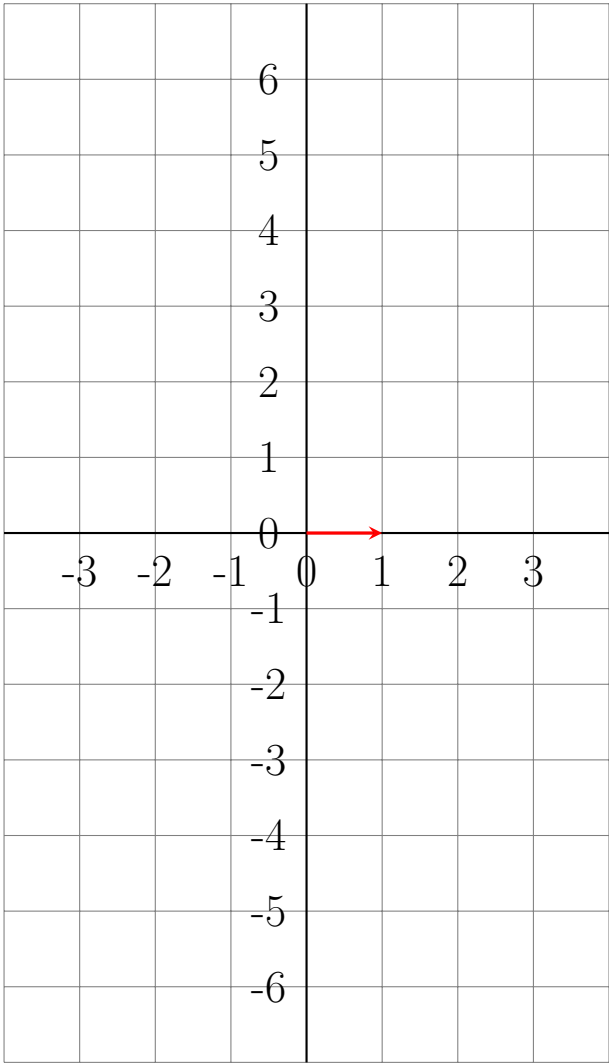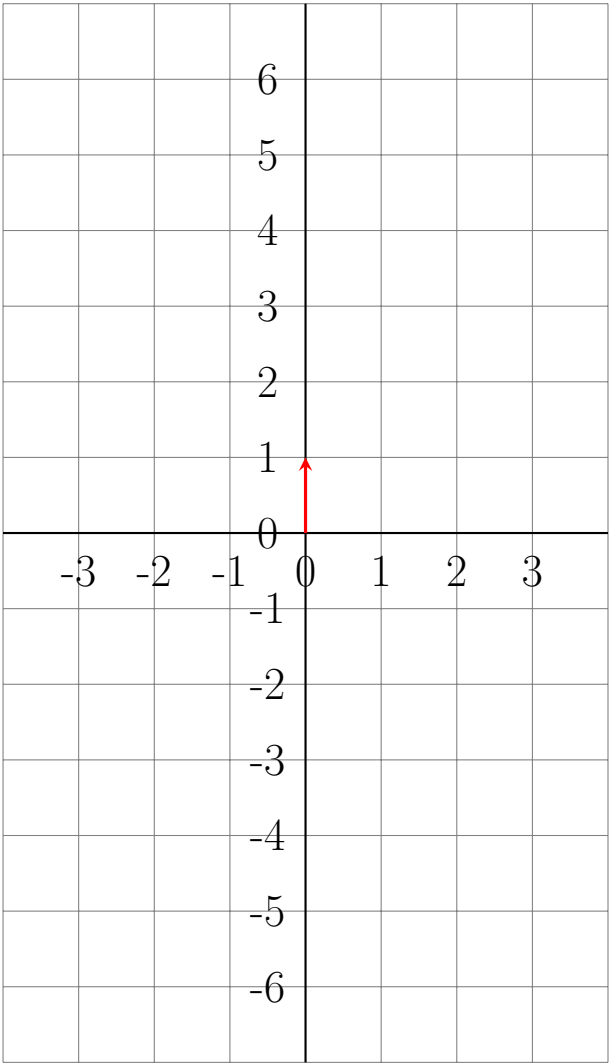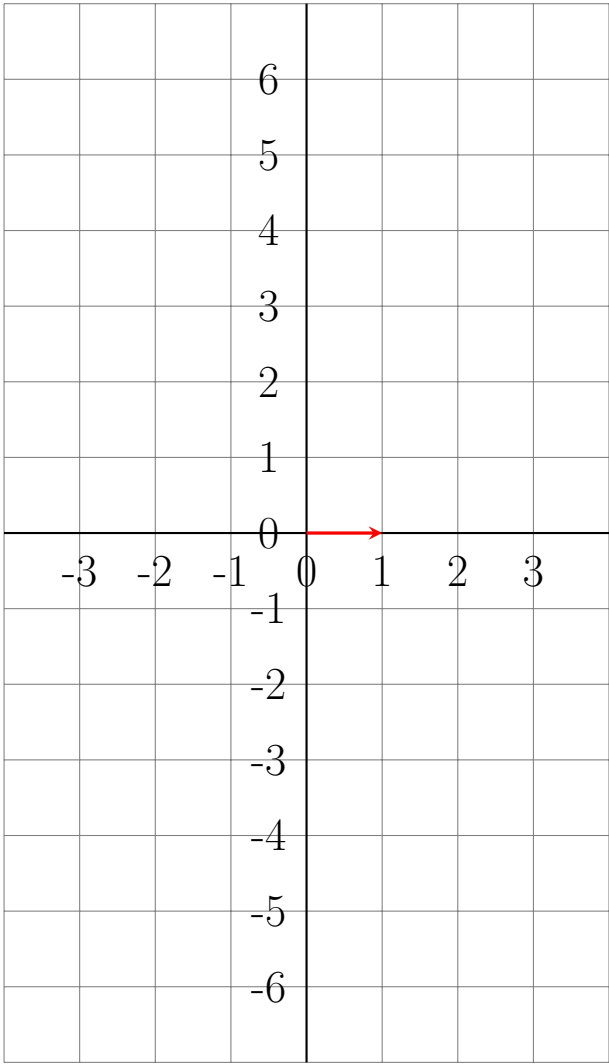
Rotate the vector 90 degrees anti-clockwise:
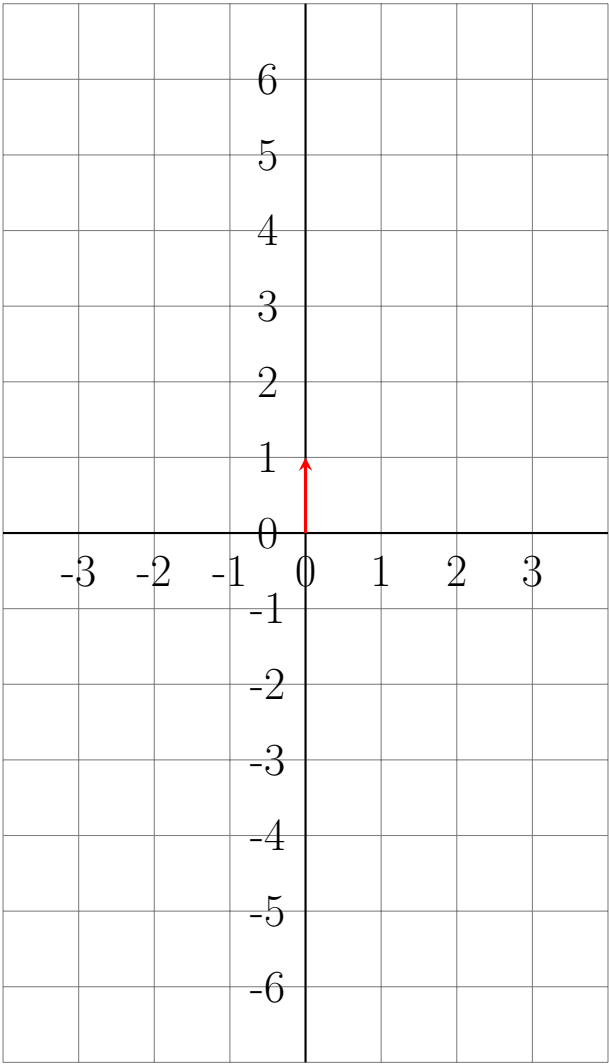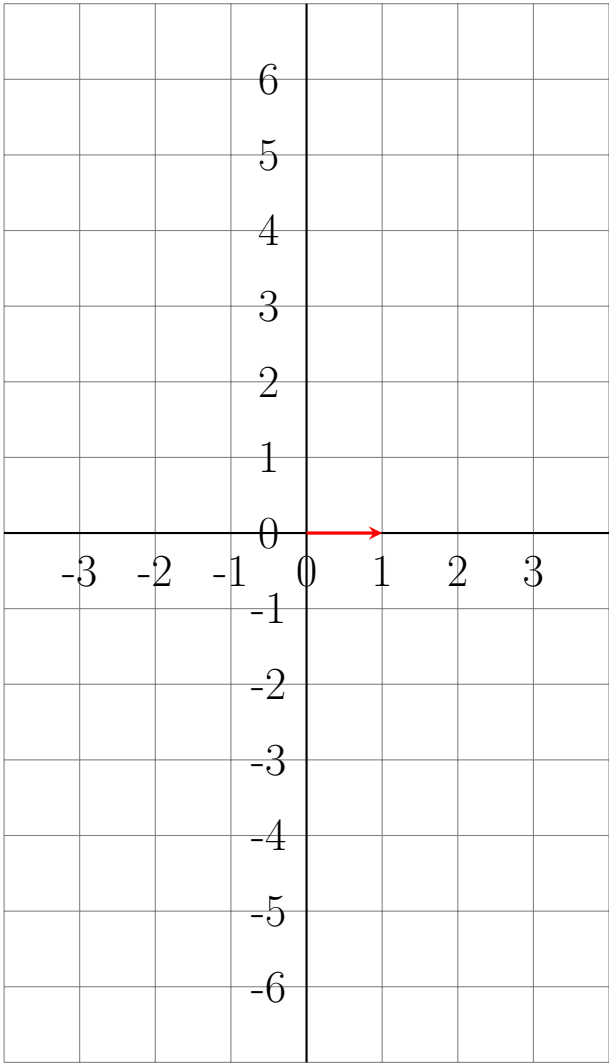
Find a matrix which transforms the first vector into the second vector:

$\begin{pmatrix} 1 \\ 0 \end{pmatrix}, \begin{pmatrix} 0 \\ 1 \end{pmatrix}$

$\begin{pmatrix} 1 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

$\begin{pmatrix} 1 \\ 0 \end{pmatrix}, \begin{pmatrix} -1 \\ 0 \end{pmatrix}$

$\begin{pmatrix} 1 \\ 0 \end{pmatrix}, \begin{pmatrix} 0 \\ -1 \end{pmatrix}$

$\begin{pmatrix} 1 \\ 0 \end{pmatrix}, \begin{pmatrix} 2 \\ 0 \end{pmatrix}$

$\begin{pmatrix} 1 \\ 0 \end{pmatrix}, \begin{pmatrix} 0 \\ -2 \end{pmatrix}$

Find a matrix which transforms the first vector into the second vector:

$$\begin{pmatrix} 0 \\ 1 \end{pmatrix}, \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$

$$\begin{pmatrix} 0 \\ 1 \end{pmatrix}, \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$\begin{pmatrix} 0 \\ 1 \end{pmatrix}, \begin{pmatrix} -1 \\ 0 \end{pmatrix}$$

$$\begin{pmatrix} 0 \\ 1 \end{pmatrix}, \begin{pmatrix} 0 \\ -1 \end{pmatrix}$$

$$\begin{pmatrix} 0 \\ 1 \end{pmatrix}, \begin{pmatrix} 2 \\ 0 \end{pmatrix}$$

$$\begin{pmatrix} 0 \\ 1 \end{pmatrix}, \begin{pmatrix} 0 \\ -2 \end{pmatrix}$$

Work out the matrix calculations

$$\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} \begin{pmatrix} 5 \\ 7 \end{pmatrix} \qquad \qquad \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} \begin{pmatrix} 6 \\ 8 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} \begin{pmatrix} 5 & 6 \\ 7 & 8 \end{pmatrix} \qquad \qquad .$$

Work out the matrix calculations

$$\begin{pmatrix} 1 & 2 \\ 2 & 3 \end{pmatrix} \begin{pmatrix} 4 \\ 7 \end{pmatrix}$$
$$\begin{pmatrix} 1 & 2 \\ 2 & 3 \end{pmatrix} \begin{pmatrix} 5 \\ 8 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 2 \\ 2 & 3 \end{pmatrix} \begin{pmatrix} 4 & 5 \\ 7 & 8 \end{pmatrix}$$
.

Work out the transformation matrix for each transformation:

Reflection in the line $y = x$

Reflection in the x-axis

Reflection in the y-axis

Reflection in the line $y = -x$

Work out the transformation matrix for each transformation:

Enlargement by scale factor 2   No change

Rotation 90 degrees anticlockwise about the Rotation 180 degrees about the origin
origin

Work out the transformation matrix for each transformation:

Rotation 90 degrees clockwise about the origin

Rotation 45 degrees clockwise about the origin

Enlargement by scale factor -2

Stretching by scale factor 2 along the x-axis

Work out the transformation matrix for a rotation of θ degrees anti-clockwise about the origin: