7.4) Successive transformations

Worked example	Your turn
Represent as a single matrix the transformation representing a reflection in the line $y = x$ followed by a stretch parallel to the x-axis by a factor of 4.	Represent as a single matrix the transformation representing a reflection in the line $y = -x$ followed by a stretch parallel to the y-axis by a factor of 3. $$\begin{pmatrix} 0 & -3 \\ -1 & 0 \end{pmatrix}$$
Represent as a single matrix the transformation representing a rotation 90° anticlockwise about the point (0,0) followed by a reflection in the line x-axis. What single transformation is this?	Represent as a single matrix the transformation representing a rotation 270° anticlockwise about the point (0,0) followed by a reflection in the line y-axis. What single transformation is this? $$\begin{pmatrix} 0 & -1 \\ -1 & 0 \end{pmatrix}$$ Reflection in the line $y = -x$

Worked example	Your turn
The matrix R is given by $R = \begin{pmatrix} -\frac{1}{2} & -\frac{\sqrt{3}}{2} \\ \frac{\sqrt{3}}{2} & -\frac{1}{2} \end{pmatrix}$	The matrix R is given by $R = \begin{pmatrix} \frac{1}{\sqrt{2}} & -\frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} & \frac{1}{\sqrt{2}} \end{pmatrix}$

Worked example:

a) Find R^3
b) Describe the geometric transformation represented by R^3
c) Hence describe the geometric transformation represented by R
d) Write down R^{900}

Your turn:

a) Find R^2
b) Describe the geometric transformation represented by R^2
c) Hence describe the geometric transformation represented by R
d) Write down R^8

a) $\begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}$

b) Rotation 90° anticlockwise about $(0,0)$

c) Rotation 45° anticlockwise about $(0,0)$

d) $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} = I$