

Identify these Matrices
What transformation do they represent?

Name Key

① $\begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$
(y, -x) R_{-90}

② $\begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}$
(-x, y) r_{y-axis}

③ $\begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$
(-y, x) R_{90}

④ $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$
(y=x) $r_{y=x}$

⑤ $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$
Identity

⑥ $\begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}$
(x, -y) $r_{y=0}$

⑦ $\begin{bmatrix} 0 & -1 \\ -1 & 0 \end{bmatrix}$
(-y, -x) $r_{y=x}$

⑧ $\begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix}$
(-x, -y) R_{180}

⑨ Write a transformation matrix for these size transformations

Ⓐ S_4

$$\begin{bmatrix} 4 & 0 \\ 0 & 4 \end{bmatrix}$$

Ⓑ S_{-2}

$$\begin{bmatrix} -2 & 0 \\ 0 & -2 \end{bmatrix}$$

Ⓒ $S_{\frac{1}{2}}$

$$\begin{bmatrix} \frac{1}{2} & 0 \\ 0 & \frac{1}{2} \end{bmatrix}$$

Ⓓ S_{10}

$$\begin{bmatrix} 10 & 0 \\ 0 & 10 \end{bmatrix}$$

⑩ Find the transformation matrix for these composites

Ⓐ $r_x \circ r_{x=y}$
 R_{90}

$$\begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$$

Ⓑ $R_{90} \circ S_2$

$$\begin{bmatrix} 0 & -2 \\ 2 & 0 \end{bmatrix}$$

Ⓒ $r_y \circ S_{-3}$

$$\begin{bmatrix} +3 & 0 \\ 0 & -3 \end{bmatrix}$$

Ⓓ $R_{180} \circ r_{y=-x}$

$$\begin{bmatrix} 0 & +1 \\ +1 & 0 \end{bmatrix}$$

⑪ Write a transformation matrix for these image formulas

Ⓐ $(4x+2y, 2x+y)$

$$\begin{bmatrix} 4 & 2 \\ 2 & 1 \end{bmatrix}$$

Ⓑ $(3x, x-y)$

$$\begin{bmatrix} 3 & 0 \\ 1 & -1 \end{bmatrix}$$

Ⓒ $(15x-5y, -x+3y)$

$$\begin{bmatrix} 15 & -5 \\ -1 & 3 \end{bmatrix}$$