2x2 MATRIX TRANSFORMATIONS

EXERCISE 1: State what reflection the following matrices correspond to

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

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

c) $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$

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

EXERCISE 2: Plot the following points in the x-y plane, and then reflect in the x-axis (showing the multiplication)

a) A = (2, 2) B = (2, 3)

C = (3, 2) D = (3, 3)

b) A = (-4, -10) B = (-4, -6)

C = (-8, -10) D = (-8, -6)

EXERCISE 3: State what effect the following rotation matrices would have (angle and direction)

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

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

c) $\begin{bmatrix} \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} \\ -\frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} \end{bmatrix}$

EXERCISE 4: State the scale factor for length and scale factor for area in the following

a) $\begin{bmatrix} 2 & 0 \\ 0 & 2 \end{bmatrix}$

b) $\begin{bmatrix} -4 & 0 \\ 0 & -4 \end{bmatrix}$