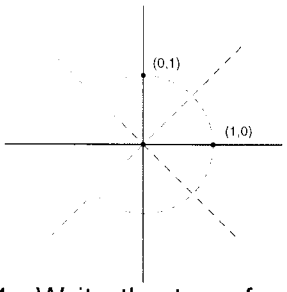
Classwork: Uses of Matrices

Name_____
Class _____ Date _____

3. Identify these matrices
Give the image formula and a description of the transformation in words



a, $\begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$ $R_{90°}$

b. $\begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}$ $r_{y\text{ axis}}$

c. $\begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix}$ $R_{180°}$

d. $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ Identity (no change)

4. Write the transformation matrix for the following conditions

A. Reflection over y = -x

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

B. Size Transformation -5

$-5\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ OR $\begin{bmatrix} -5 & 0 \\ 0 & -5 \end{bmatrix}$

C. (5x + 3y, 9x – y)

$\begin{bmatrix} 5 & 3 \\ 9 & -1 \end{bmatrix}$

D. Rotation -90 degrees

OR $R_{270°}$

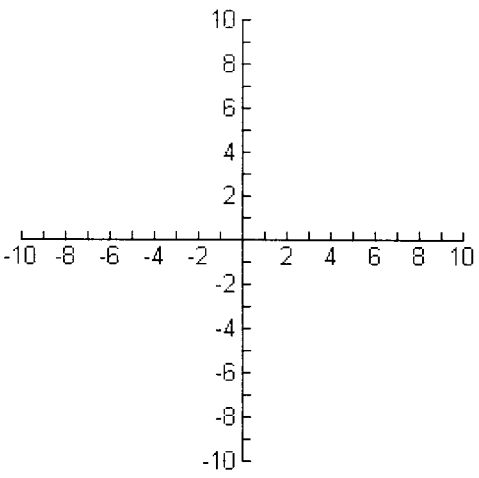
$\begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$

5. Find the ending transformation for triangle ABC using matrices where A(-6,3) B(5, -8) C (3, 9)
Be sure to show the matrices used.

$(r_{y=x} \circ R_{90°})(\Delta ABC)$

$\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}\begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}\begin{bmatrix} -6 & 5 & 3 \\ 3 & -8 & 9 \end{bmatrix} = \begin{matrix} A'' & B'' & C'' \\ \end{matrix}\begin{bmatrix} -6 & 5 & 3 \\ -3 & 8 & -9 \end{bmatrix}$

6. Graph triangle DEF where D(-3,-1) E(2,1) F(1,-3) Set up a transformation matrix for this image formula (3x – y, x + 3y) and using matrices find the transformation of triangle DEF and graph the image.



$\begin{bmatrix} 3 & -1 \\ 1 & 3 \end{bmatrix}\begin{matrix} D & E & F \\ \end{matrix}\begin{bmatrix} -3 & 2 & 1 \\ -1 & 1 & -3 \end{bmatrix} = \begin{matrix} D' & E' & F' \\ \end{matrix}\begin{bmatrix} -8 & 5 & 6 \\ -6 & 5 & -8 \end{bmatrix}$