

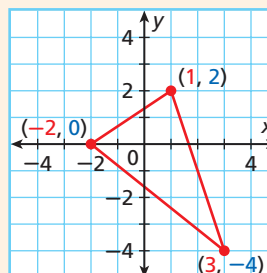
12-3 Technology LAB

Explore Transformations with Matrices

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KEYWORD: MG7 Lab12

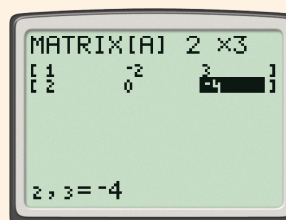
Use with Lesson 12-3

The vertices of a polygon in the coordinate plane can be represented by a *point matrix* in which row 1 contains the x -values and row 2 contains the y -values. For example, the triangle with vertices $(1, 2)$, $(-2, 0)$, and $(3, -4)$ can be represented by $\begin{bmatrix} 1 & -2 & 3 \\ 2 & 0 & -4 \end{bmatrix}$.



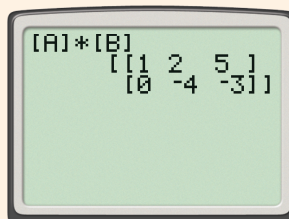
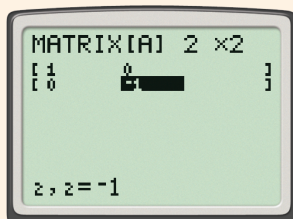
On the graphing calculator, enter a matrix using the **Matrix Edit** menu. Enter the number of rows and columns and then enter the values.

Matrix operations can be used to perform transformations.



Activity 1

- Graph the triangle with vertices $(1, 0)$, $(2, 4)$, and $(5, 3)$ on graph paper. Enter the point matrix that represents the vertices into matrix **[B]** on your calculator.
- Enter the matrix $\begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}$ into matrix **[A]** on your calculator. Multiply $[A] * [B]$ and use the resulting matrix to graph the image of the triangle. Describe the transformation.



Try This

- Enter the matrix $\begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}$ into matrix **[A]**. Multiply $[A] * [B]$ and use the resulting matrix to graph the image of the triangle. Describe the transformation.
- Enter the matrix $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$ into matrix **[A]**. Multiply $[A] * [B]$ and use the resulting matrix to graph the image of the triangle. Describe the transformation.