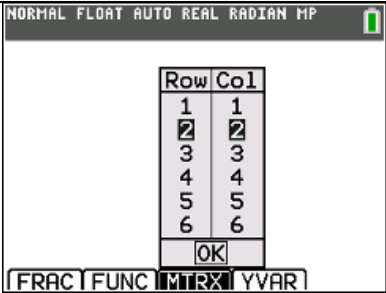
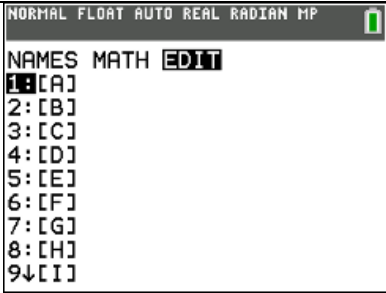
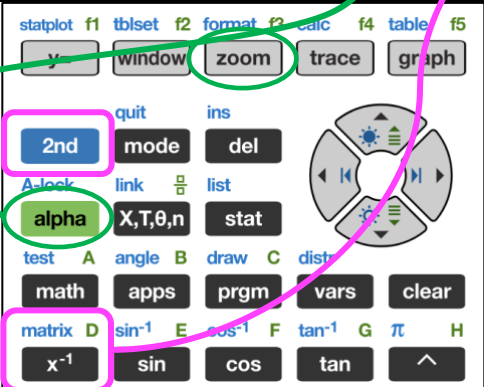
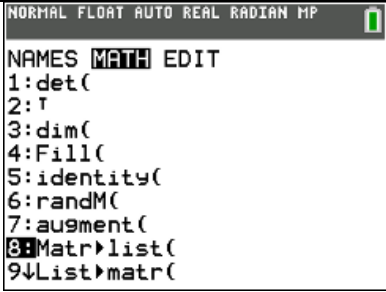
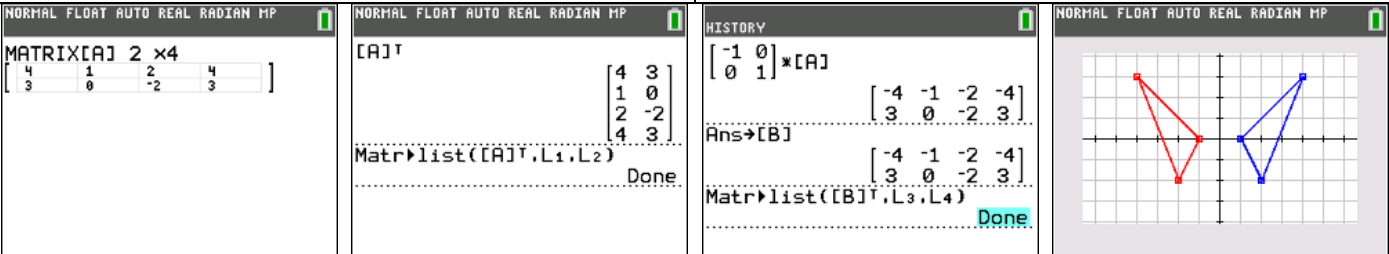
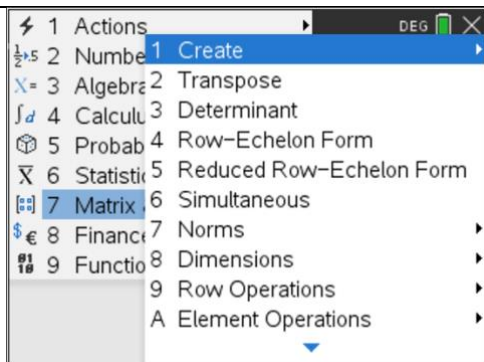


Matrix Operations on TI-84+CE Calculators

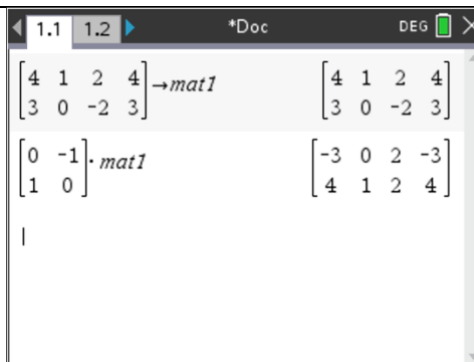
TWO ways to enter matrices:

<p>"On the fly" ALPHA-ZOOM</p>  <p>Can operate on Home Screen Can store matrices to MATRIX menu</p>	<p>MATRIX Menu 2^{nd} x^{-1} >> EDIT</p>  <p>Enter & Edit using Matrix EDIT menu Call up matrices on Home Screen for operations using Matrix NAMES menu</p>
	 <p>Use Matrix MATH menu to (2) Transpose and send each column to a list (8) Matr>List</p>
<p>Scatterplots</p> <p>Set up with 2^{nd} Y=</p> <p>Choose a connected dot plot to graph a closed figure (and repeat first pair of coordinates as last pair)</p> <p>Choose WINDOW settings; can turn on grid with 2^{nd} ZOOM [FORMAT]</p>	
<p>Transforming a Polygon</p> 	

Matrix Operations on TI-Nspire Calculators



Create matrices on Calculator screen.
Can STORE to a variable name CTRL-VAR [STO->]



Can perform operations on Calculator Screen

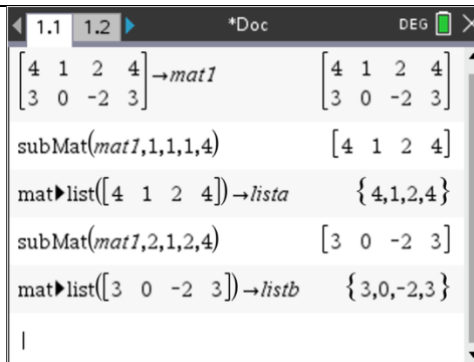
To convert a point matrix to a list, must first create a submatrix for each row.

Menu > Matrix > 1. Create > 7. Submatrix

Syntax: matrix name, start row, start column, end row, end column

Then convert each submatrix to a list

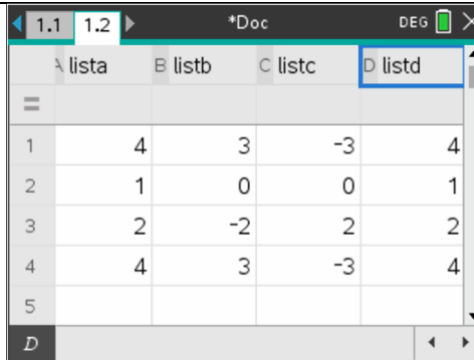
Menu > Statistics > 4. List Operations > 9. Convert Matrix to List



Notice that our Row1 = Xvals, Row2 = Yvals

Scatterplots:

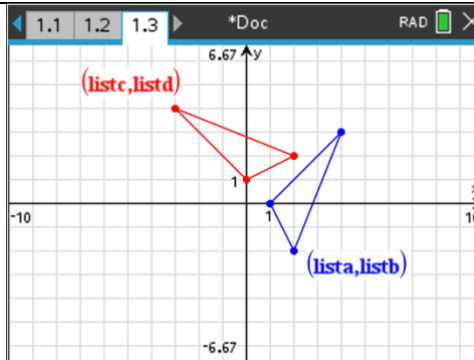
On a Lists & Spreadsheets screen, enter the list names at the top of the lists.



On a Graphs screen, Menu > Graph Entry/Edit to enter a scatterplot.

Enter the variable names (access with VAR)

Ctrl-Click on Graph Entry Line & choose Attributes to connect points of graph.



Matrix Operations in GeoGebra

Entering Matrices

GeoGebra supports real matrices, which are represented as a list of [lists](#) that contain the rows of the matrix. Use { } for the matrix; enter each row within { }; separate elements with commas.

Example: {{1, 2, 3}, {4, 5, 6}, {7, 8, 9}} represents the 3x3 matrix
$$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$$

Multiplication and division

- **Matrix * Number**: multiplies each element of *Matrix* by the given *Number*.
- **Matrix1 * Matrix2**: uses matrix multiplication to calculate the resulting matrix.

ApplyMatrix Tool

Begin with a polygon or other object.

ApplyMatrix[Matrix, Object]: apply affine transform given by matrix on object.

Matrix Tool (from Spreadsheet)

Select a set of spreadsheet cells. Then, click on the tool button to open a dialog for naming, modifying and creating a matrix from the selected cells.

Matrix Operations in Desmos

Choose the  Matrix Calculator from the Desmos home page

Or go directly to <https://www.desmos.com/matrix>

Documentation:

<https://help.desmos.com/hc/en-us/articles/4404851938445-Matrix-Calculator>