Matrix Operations on the TI-83/84

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Entering a Matrix:
Press [2nd][MATRX] (TI-83+/84) or [MATRX] (TI-83) to see a screen with a menu that looks as shown in *screen 1*. The dimensions on the right of the names show that there is a matrix stored there. To enter a matrix scroll to [EDIT] then down to the matrix name you want, press [ENTER]. You are then asked for the size of the matrix (rows $\times$ columns), then you may enter the values for each entry. Pressing enter after each value moves you to the left until the end of the row, pressing enter again moves you to the next row. After the matrix has been entered press [2nd][QUIT] to return to the home screen. Once the matrix has been entered you can select the matrix from [NAMES] in the matrix menu. The rest of the examples will be in reference to the matrix shown in *screen 2*.
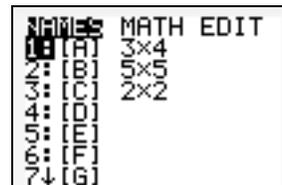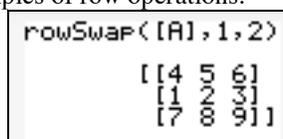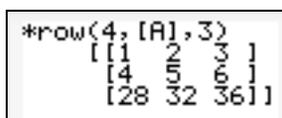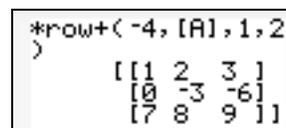

Screen 1
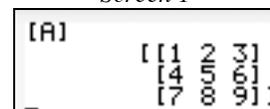
Screen 2

Row operations: The three row operations can be found by pressing [MATRX], scrolling to [MATH] and scrolling down (or up). Examples of row operations:

Swap rows 1 and 2
$(R_1 \leftrightarrow R_2)$


Multiply row 3 by 4
$(4R_3 \rightarrow R_3)$

Add –4 times row 1 to row 2
$(-4R_1 + R_2 \rightarrow R_2)$

Note 1: You must select the name of the matrix from the matrix menu. Putting square brackets around A will not call the matrix.
**Note 2**: If you are doing many row operations on the same matrix you should use [ANS] instead of the name of the matrix after the first row operation.

**Row Echelon Form (ref) and Reduced Row Echelon Form (rref)**: Press [MATRX], scroll to [MATH], scroll down (or up) to select the desired form followed by the name of the matrix and press enter. For example:
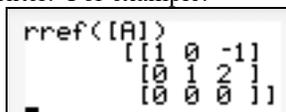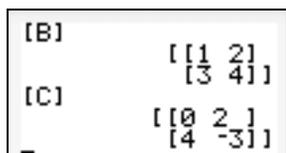

Inverse Matrices: Select the name of the matrix and press [x^{-1}]. The matrix A above is not invertible so we consider
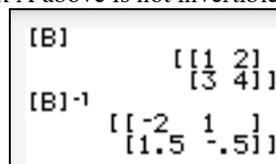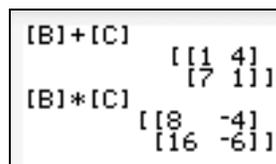

It is sometimes handy to convert to fractions. This can be done by pressing [MATH] and selecting [$\triangleright$ Frac]. This command works for any computation, not just with matrices. To convert B^{-1} to fractions do as follows:
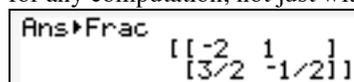
Addition and Multiplication: These operations are done with the regular multiplication and addition keys along with the names of the matrices. For example consider matrices [B] and [C] shown in *screen 3* with the computations in *screen 4*.

Screen 3

Screen 4