

# Evaluate Determinants of Square Matrices

Instructions for the TI-84 Plus

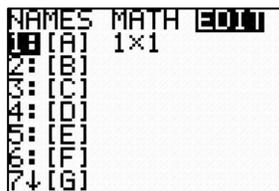
**Example:** Evaluate the determinant of  $A = \begin{bmatrix} 2 & 1 & -1 \\ -1 & -5 & 4 \\ 3 & 2 & -7 \end{bmatrix}$ .

## Entering a matrix into the calculator:

In order to find the determinant, you need to enter the matrix into the calculator.

After you turn the calculator on, access the MATRIX menu by pressing  . The first thing you need to do is enter the matrix, so use the arrow keys   to highlight EDIT. Your screen should look similar to figure 1.

Fig. 1



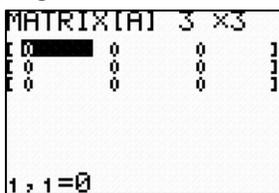
Note: The matrices may or may not have numbers such as 1×1 beside them and the numbers could be different, but that will not cause a problem.

Hit  to tell the calculator that you want to enter your information in matrix A. (If you want to use a different matrix, use the arrow keys to highlight the number beside that matrix before you press enter).

The numbers beside [A] represent the dimensions of the matrix. The matrix you want to enter has 3 rows and 3 columns, so press    .

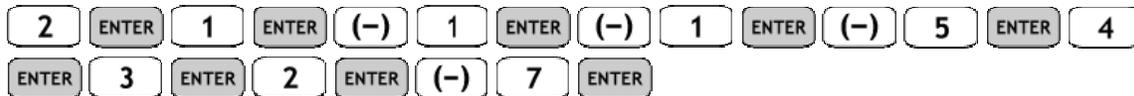
The calculator adjusts to give you 3 rows and 3 columns to enter information. Your screen should look like figure 2.

Fig. 2



Note: The numbers in the matrix on your screen may not be zeros, but that is OK.

Enter the numbers from your matrix. When you press enter, the cursor will move to the right. When the cursor reaches the end of a row, it will move to the beginning of the next row until the matrix has been filled.



Now you have entered the matrix, so your screen should look like figure 3.

Fig. 3



You can return to your home screen by pressing .

### Viewing a matrix

If you want to view your matrix from the home screen, press to enter the matrix menu. Make sure that NAMES is highlighted to tell the calculator that you want to display a matrix. Use the arrow keys to put your cursor on the number beside the matrix that you want to display (for us, that is the 1 beside matrix A) and press .

Press again to tell the calculator to display this matrix. Your screen should look like figure 4.

Fig. 4

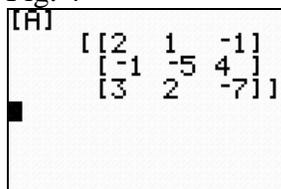
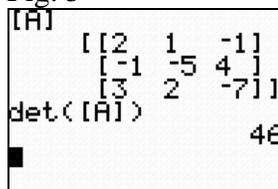


Fig. 5



### Determinant of a matrix

To calculate the determinant of a matrix, press to enter the MATRIX menu.

Press to highlight the MATH menu. You want to calculate the determinant, so press because the number beside **det**( is already highlighted. Now you need to tell the calculator which matrix to use, so press to enter the MATRIX menu.

You want Matrix A, so press when your cursor is on the number beside matrix A.

Press to close off the parentheses that your calculator automatically opened for you. The screen on your calculator should say det([A]). That is all that you need to tell the calculator, so press to tell the calculator to calculate the determinant.

If you displayed the matrix then calculated the determinant, your screen should look like figure 5 (above). The determinant of matrix A is 46. In other words,  $|A| = 46$ .