

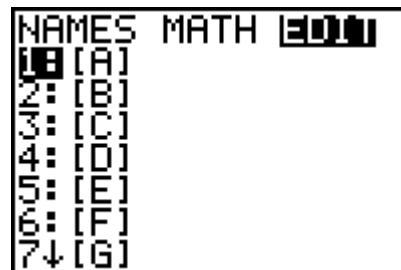
Working with Matrices

Name: _____

Date: _____

How to open the matrix edit window.

1. Press the **[ON]** key.
2. Press the **[MATRX]** key, then press **[◀]**. After pressing the **[◀]** key the EDIT in the top right hand corner will be highlighted.

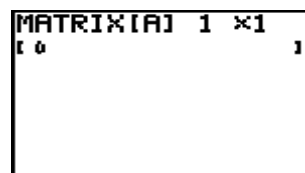


3. Now, press the **[ENTER]** key and the matrix edit screen will appear.

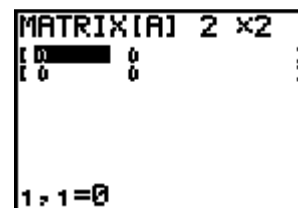
Entering Matrices in the Calculator.

$$A = \begin{bmatrix} 2 & 2 \\ 3 & 4 \end{bmatrix} \qquad B = \begin{bmatrix} 0 & 5 \\ 4 & 3 \end{bmatrix}$$

4. First, we have to enter the dimensions of the matrix (row \times column). The dimensions of the matrix are located on the top right hand corner of the screen.
5. Entering the dimensions of Matrix A.



- a. Press the **[2]** key, because the row dimension is 2.
- b. Next, press the **[▶]** key, this moves the cursor over to the column dimension.
- c. Press the **[2]** key for the column's dimension.
- d. Next press the **[ENTER]**, and the rectangular cursor moves to the first matrix element position.



6. Entering the elements for Matrix A.

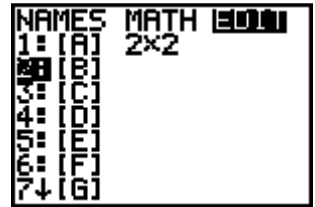
- a. First, Press the **[2]** key and a 2 will appear in the first position of the matrix.
- b. Second, press the **[ENTER]** key, the cursor will move right to the first position in the second column.
- c. Now, press the **[2]** key.
- d. Next, press the **[ENTER]** key and the cursor will move to the second row.
- e. Next, press **[3] [ENTER]**.
- f. Press **[4] [ENTER]**, now the matrix is entered into the calculator and your screen should look like the diagram.



- g. So, press the $\boxed{2\text{nd}}$ key, then press $\boxed{\text{MODE}}$ key. (This will save the matrix and return you to a blank screen.)

7. Entering the dimensions and elements for Matrix B.

- Press the $\boxed{\text{MATRX}}$ key.
- Next, press the $\boxed{\downarrow}$ key, and the number 2 should be highlighted.
- Next, press the $\boxed{\leftarrow}$ key, and the EDIT will be highlighted.
- Press $\boxed{\text{ENTER}}$ and screen similar to step four will appear.
- Next, repeat steps 4 to 5d, except fill in the numbers for Matrix B. After completing step 5, enter in the elements for matrix B (similar to number 6).
- Now, press the $\boxed{2\text{nd}}$ key, then the $\boxed{\text{MODE}}$ key (this will clear your screen).

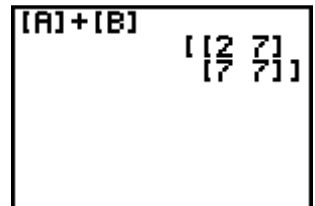


Using Math Functions with Matrices.

_ Note – In order to use the following math functions, the dimensions must be appropriate. Each of the following functions will create a new matrix; the original matrix remains the same.

8. Adding Matrices

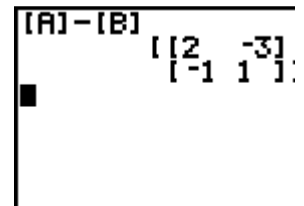
- To add (+) Matrices, the dimensions must be the same.
- To add Matrix A and Matrix B.
- Press $\boxed{\text{MATRX}}$ $\boxed{\text{ENTER}}$ (to select Matrix A) $\boxed{+}$ $\boxed{\text{MATRX}}$ $\boxed{\downarrow}$ (to select Matrix B) $\boxed{\text{ENTER}}$.
- Then, press the $\boxed{\text{ENTER}}$ key to add the matrices. Your screen should look similar to the diagram.



$$\text{Therefore, Matrix A + Matrix B} = \begin{bmatrix} 2 & 7 \\ 7 & 7 \end{bmatrix}.$$

9. Subtracting Matrices

- To subtract (-) matrices, the dimensions must be the same.
- To subtract Matrix B from Matrix A.
- Press $\boxed{\text{MATRX}}$ $\boxed{\text{ENTER}}$ (to select Matrix A) $\boxed{-}$ $\boxed{\text{MATRX}}$ $\boxed{\downarrow}$ (to select Matrix B) $\boxed{\text{ENTER}}$.
- Then, press the $\boxed{\text{ENTER}}$ key to subtract Matrix B from Matrix A and, your screen should look similar to the diagram.



$$\text{Therefore, Matrix A - Matrix B} = \begin{bmatrix} 2 & -3 \\ -1 & 1 \end{bmatrix}.$$

10. Multiplying Matrices

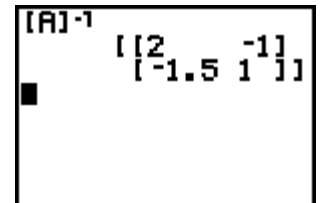
- To multiply (\times) two matrices together, the column dimension of Matrix A must match the row dimension of Matrix B.
- To multiply Matrix A and Matrix B.
- Press $\boxed{\text{MATRX}}$ $\boxed{\text{ENTER}}$ (to select Matrix A) $\boxed{\times}$ $\boxed{\text{MATRX}}$ $\boxed{\downarrow}$ (to select Matrix B) $\boxed{\text{ENTER}}$.
- Then, press the $\boxed{\text{ENTER}}$ key to multiply Matrix A and Matrix B, and your screen should look similar to the diagram.



Therefore, Matrix A \times Matrix B = $\begin{bmatrix} 8 & 16 \\ 16 & 27 \end{bmatrix}$.

11. To find an Inverse of a Matrix

- To find the inverse of Matrix A.
- Press $\boxed{\text{MATRX}}$ $\boxed{\text{ENTER}}$ $\boxed{x^{-1}}$ $\boxed{\text{ENTER}}$ and, your screen should look similar to the diagram.



Therefore, the inverse of Matrix A = $\begin{bmatrix} 2 & -1 \\ -1.5 & 1 \end{bmatrix}$.

Matrix



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$$A = \begin{bmatrix} 4 & 5 & 6 \\ 7 & 5 & 2 \\ 1 & 2 & 0 \end{bmatrix}$$

$$B = \begin{bmatrix} 3 & 4 & 9 \\ 7 & 5 & 8 \\ 6 & 2 & 0 \end{bmatrix}$$

$$C = \begin{bmatrix} 8 & 7 \\ 6 & 2 \end{bmatrix}$$

$$D = \begin{bmatrix} 1 & 2 \\ 3 & 2 \end{bmatrix}$$

1. $A + B =$

2. $C + D =$

3. $B - A =$

4. $C - D =$

5. $A + C =$

6. $A \times B =$

7. $C \times D =$

8. $B \times D =$

9. $D^{-1} =$

10. $\begin{bmatrix} 2 & 1 & 5 \\ 6 & 2 & 2 \\ 7 & 3 & 1 \end{bmatrix}^{-1} =$