Keystroke Guide for Chapter 4

Essential keystroke sequences (using the model TI-82 or TI-83 graphics calculator) are presented below for all Activities and Examples found in this chapter that require or recommend the use of a graphics calculator.

internet connect

For Keystrokes of other graphing calculator models, visit the HRW web site at **go.hrw.com** and enter the keyword **MB1 CALC**.

LESSON 4.1

EXAMPLE 3 *Page 217*

Let $A = \begin{bmatrix} -2 & 0 & 1 \\ 5 & -7 & 8 \end{bmatrix}$ and $B = \begin{bmatrix} 5 & 7 & -1 \\ 0 & 2 & -8 \end{bmatrix}$. For part a, find $A + B$.

For TI-83 Plus, press 2nd MATRIX (x^{-1}) to access the matrix menu.

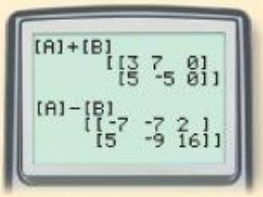
Enter the matrices:

Matrix A has dimensions of 2 × 3.

MATRX EDIT 1:[A] ENTER (Matrix[A]) 2 ENTER 3 ENTER (–) 2 ENTER 0 ENTER 1 ENTER 5 ENTER (–) 7 ENTER 8 ENTER MATRX EDIT 2:[B] ENTER (Matrix[B]) 2 ENTER 3 ENTER 5 ENTER 7 ENTER (–) 1 ENTER 0 ENTER 2 ENTER (–) 8 ENTER 2nd QUIT (MODE)

Add the matrices:

MATRX NAMES 1:[A] ENTER + MATRX NAMES 2:[B] ENTER ENTER



For part **b**, find $A - B$ by using a similar keystroke sequence to subtract the matrices.

LESSON 4.2

EXAMPLE 3 *Page 228*

Enter matrix A, and find A^2.

Enter the matrix:

Use a keystroke sequence similar to that in Example 3 of Lesson 4.1.

Square the matrix:

MATRX NAMES 1:[A] ENTER x^2 ENTER

LESSON 4.3

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Enter matrix $A = \begin{bmatrix} 1 & 2 \\ 3 & 5 \end{bmatrix}$, and find its inverse.

Enter the matrix:

Use a keystroke sequence similar to that in Example 3 of Lesson 4.1.

Find the inverse of matrix *A*:

MATRX NAMES 1:[A] ENTER x^{-1} ENTER

EXAMPLE 2

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For part a, enter matrix $A = \begin{bmatrix} 6 & 8 \\ 5 & 7 \end{bmatrix}$, and find its inverse.

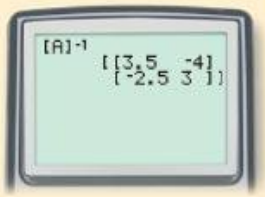
Enter the matrix:

Use a keystroke sequence similar to that in Example 3 of Lesson 4.1.

Find the inverse of matrix *A*:

MATRX NAMES 1:[A] ENTER x^{-1} ENTER

For parts **b** and **c**, use a similar keystroke sequence.



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Let $A = \begin{bmatrix} 6 & 5 \\ 7 & 6 \end{bmatrix}$ and $B = \begin{bmatrix} 7 & 15 & 0 \\ 2 & 15 & 2 \end{bmatrix}$. Find the product *AB*.

Enter the matrices:

Use a keystroke sequence similar to that in Example 3 of Lesson 4.1.

Find the product *AB*:

MATRX NAMES 1:[A] ENTER X MATRX NAMES 2:[B] ENTER ENTER

EXAMPLE 3

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Let $A = \begin{bmatrix} 6 & 5 \\ 7 & 6 \end{bmatrix}$ and $C = \begin{bmatrix} 52 & 165 & 10 \\ 61 & 195 & 12 \end{bmatrix}$. Find $A^{-1}C$.

Enter the matrices:

Use a keystroke sequence similar to that in Example 3 of Lesson 4.1.

Find the product $A^{-1}C$:

MATRX NAMES 1:[A] ENTER x^{-1} X MATRX NAMES 2:[C] ENTER ENTER

EXAMPLE 4 For part a, find the determinant of $\begin{bmatrix} 7 & 8 \\ 6 & 7 \end{bmatrix}$.

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Enter the matrix:

Use a keystroke sequence similar to that in Example 3 of Lesson 4.1.

Find the determinant:

MATRX MATH 1:det(ENTER MATRX NAMES 1:[A] ENTER ENTER

LESSON 4.4

EXAMPLE 1 Solve $\begin{bmatrix} 1 & 1 \\ 0.05 & 0.14 \end{bmatrix}\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 50{,}000 \\ 5000 \end{bmatrix}$ for $\begin{bmatrix} x \\ y \end{bmatrix}$.

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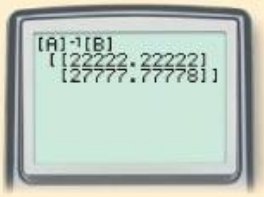
Do not enter the comma when you enter the number 50,000.

Enter the matrices:

Enter the coefficient matrix, $A = \begin{bmatrix} 1 & 1 \\ 0.05 & 0.14 \end{bmatrix}$, and the constant matrix, $B = \begin{bmatrix} 50{,}000 \\ 5000 \end{bmatrix}$. Use a keystroke sequence similar to that in Example 3 of Lesson 4.1.



Find the product $A^{-1}B$:

MATRX NAMES 1:[A] ENTER x^{-1} X

MATRX NAMES 2:[B] ENTER ENTER

EXAMPLE 2 Solve $\begin{bmatrix} 5 & 2 & -1 \\ 1 & -2 & 2 \\ 0 & 3 & 1 \end{bmatrix}\begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} -7 \\ 0 \\ 17 \end{bmatrix}$ for $\begin{bmatrix} x \\ y \\ z \end{bmatrix}$.

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Enter the matrices:

Enter matrix $A = \begin{bmatrix} 5 & 2 & -1 \\ 1 & -2 & 2 \\ 0 & 3 & 1 \end{bmatrix}$ and matrix $B = \begin{bmatrix} -7 \\ 0 \\ 17 \end{bmatrix}$.

Use a keystroke sequence similar to that in Example 3 of Lesson 4.1.

Find the product $A^{-1}B$:

Use a keystroke sequence similar to that in Example 1 of Lesson 4.4.

Activity

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For Step 1, find the determinant of matrix $A = \begin{bmatrix} 4 & 9 \\ 2 & 5 \end{bmatrix}$.

Enter the matrix:

Use a keystroke sequence similar to that in Example 3 of Lesson 4.1.

Find the determinant:

MATRX MATH 1:det(ENTER MATRX NAMES 1:[A] ENTER ENTER

EXAMPLE 3 Solve $\begin{bmatrix} -3 & 4 \\ -6 & 8 \end{bmatrix}\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 3 \\ 18 \end{bmatrix}$ for $\begin{bmatrix} x \\ y \end{bmatrix}$.

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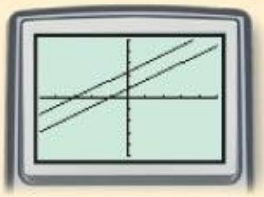
Enter matrix $A = \begin{bmatrix} -3 & 4 \\ -6 & 8 \end{bmatrix}$ and matrix $B = \begin{bmatrix} 3 \\ 18 \end{bmatrix}$, and find $A^{-1}B$. Use a keystroke sequence similar to that in Example 1 of Lesson 4.4.

Solve $-3x + 4y = 3$ and $-6x + 8y = 18$ for y, and graph the lines:

Use viewing window $[-5, 5]$ by $[-5, 5]$.



Y= (3 ÷ 4) X,T,θ,n +
(3 ÷ 4) ENTER (Y2=)
(3 ÷ 4) X,T,θ,n + (9
÷ 4) GRAPH

LESSON 4.5

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Find the reduced row-echelon form of the matrix $\left[\begin{array}{ccc|c} 1 & 1 & 1 & 21 \\ 2 & 1 & 0 & 23 \\ 0 & 1 & 3 & 25 \end{array}\right]$.

Enter the matrix:

Enter the augmented matrix as a 3×4 matrix without the column of dots. Use a keystroke sequence similar to that in Example 3 of Lesson 4.1.

The reduced row-echelon form can not be computed with one command on the TI-82.

Find the reduced row-echelon form:

MATRX MATH B:rref(ENTER MATRX
NAMES 1:[A] ENTER) ENTER

EXAMPLES 2 and 3 **Find the reduced row-echelon form of the augmented matrix in each example.**

Pages 254 and 255

Use a keystroke sequence similar to that in the Technology example above.

Activity

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Graph the system of equations $\begin{cases} -5x + 2y = 6 \\ x + 2y = -8 \\ x + 2y = 8 \end{cases}$.

Use square viewing window $[-9.4, 9.4]$ by $[-6.2, 6.2]$.

Solve each equation for y, and use a keystroke sequence similar to that in Example 3 of Lesson 4.4.