



Keystroke Guide for Chapter 5

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

Internet connect

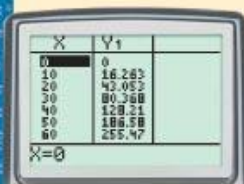
For Keystrokes of other graphing calculator models, visit the HRW web site at go.hrw.com and enter the keyword **MB1 CALC**.



LESSON 5.1

TECHNOLOGY

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Create a table of values for $y = \frac{11}{10}x + \frac{1}{19}x^2$.

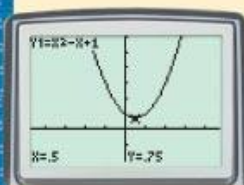
Enter the function:

Y= (11 ÷ 10) X,T,θ,n + (1 ÷ 19) X,T,θ,n x²

Create a table of values:

2nd WINDOW (TblStart=) 0 ENTER (ΔTbl=) 10 ENTER (Indpnt:) AUTO ENTER
↑ TI-82: (TblMin=) TABLE
 ▼ (Depend:) AUTO ENTER 2nd GRAPH

EXAMPLES 2 and 3 For Example 2, graph $y = x^2 - x + 1$, and find the maximum or minimum value at the vertex.
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Use friendly viewing window $[-4.7, 4.7]$ by $[-2, 6]$.

Graph the function:

Y= X,T,θ,n x² - X,T,θ,n + 1 GRAPH

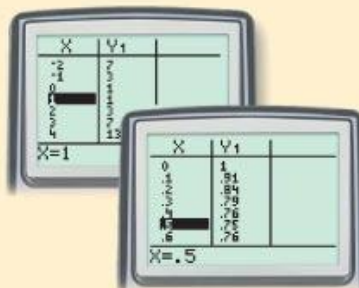
Find the minimum value:

Press TRACE, and use your cursor.

Create a table of values:

Use a keystroke sequence similar to that used in the Technology example above. First use TblStart = -2 and ΔTbl = 1. Then refine the table by using TblStart = 0 and ΔTbl = 0.1.

For Example 3, use a keystroke sequence similar to that above to graph each function. Use viewing window $[-10, 10]$ by $[-10, 10]$.



LESSON 5.2

EXAMPLES 1 and 2 For Example 1, graph $y = 4x^2 + 13$ and $y = 253$ on the same screen, and find any points of intersection.

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Move your cursor as indicated.

Use viewing window $[-10, 10]$ by $[-150, 400]$.

Graph the functions:

Use a keystroke sequence similar to that in Example 2 of Lesson 5.1.

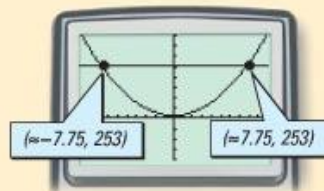
Find any points of intersection:

2nd **CALC** **TRACE** **5:Intersect** (First curve?)

ENTER (Second curve?) **ENTER**

(Guess?) **ENTER**

For Example 2, use viewing window $[-5, 10]$ by $[-25, 150]$. Use a keystroke sequence similar to that above.



EXAMPLE 3 Graph $y = -16x^2 + 68$, and find the reasonable x -intercept.

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Move your cursor as indicated.

Use viewing window $[-5, 5]$ by $[-10, 80]$.

Graph the functions:

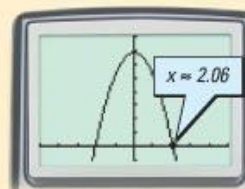
Use a keystroke sequence similar to that in Example 2 of Lesson 5.1.

Find the x -intercepts:

2nd **CALC** **TRACE** **2:zero** (Left Bound?) **ENTER**

TI-82 **2:root**

(Right Bound?) **ENTER** (Guess?) **ENTER**



LESSON 5.3

EXAMPLES 4 and 6 For Example 4, use viewing window $[-9, 3]$ by $[-7, 2]$.

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For part **a** of Example 6, use viewing window $[-2, 7]$ by $[-20, 8]$.

For part **b** of Example 6, use viewing window $[0, 12]$ by $[-6, 6]$.

To graph the functions, use a keystroke sequence similar to that in Example 2 of Lesson 5.1. To find the zeros for Example 6, use a keystroke sequence similar to finding the x -intercepts in Example 3 of Lesson 5.2. Repeat for each zero.

EXAMPLE 7 Make a table of values for $y = 2x^2 - x - 66$.

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Use a keystroke sequence similar to that used in the Technology example of Lesson 5.1. Use $TblStart = 3$ and $\Delta Tbl = 1$.

LESSON 5.4

EXAMPLE 3 Solve $2x^2 + 6x = 7$ by graphing.

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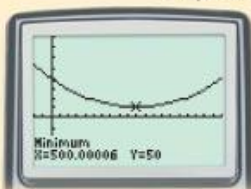
Use viewing window $[-5, 5]$ by $[-12, 12]$.

To graph $y = 2x^2 - 6x$ and $y = 7$ and find the x -coordinates of any points of intersection, use keystroke sequences similar to those in Example 2 of Lesson 5.1 and Example 1 of Lesson 5.2.

To graph $y = 2x^2 - 6x - 7$ and find any zeros, use keystroke sequences similar to those in Example 2 of Lesson 5.1 and Example 6 of Lesson 5.3.

EXAMPLE 5 Graph $y = \frac{3}{5000}x^2 - \frac{3}{5}x + 200$, and find the coordinates of the lowest point.

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Use viewing window $[-100, 1000]$ by $[-150, 40]$.

Find the minimum value:

2nd TRACE 3:minimum (Left Bound?) ENTER (Right Bound?) ENTER
 \uparrow TI-82: (Lower Bound?) \uparrow TI-82: (Upper Bound?)
 (Guess?) ENTER

LESSON 5.5

Activity

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For Step 2, use friendly viewing window $[-9.4, 9.4]$ by $[-7, 7]$. Press TRACE , and use your cursor to find the coordinates of each vertex.

LESSON 5.6

EXAMPLE 6 Evaluate the expression $\frac{2+5i}{2-3i}$ and express the answer with fractions.

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First put your calculator in complex mode.

MODE a+bi ENTER 2nd MODE $($ 2 $+$ 5 2nd $.$ $)$ $+$
 $($ 2 $-$ 3 2nd $.$ $)$ ENTER MATH 1:pFrac ENTER ENTER

The TI-82 does not have a complex mode.

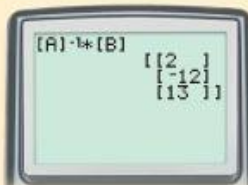
LESSON 5.7

EXAMPLES 1 and 2 For Step 2 of Example 1, solve $\begin{bmatrix} 1 & 1 & 1 \\ 4 & 2 & 1 \\ 36 & 6 & 1 \end{bmatrix} \begin{bmatrix} a \\ b \\ c \end{bmatrix} = \begin{bmatrix} 3 \\ -3 \\ 13 \end{bmatrix}$.

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Enter the coefficient matrix and the constant matrix:

MATRIX EDIT 1:[A] ENTER (MATRIX[A]) 3 ENTER 3 ENTER 1 ENTER 1 ENTER 1 ENTER
 4 ENTER 2 ENTER 1 ENTER 36 ENTER 6 ENTER 1 ENTER MATRIX EDIT 2:[B] ENTER
 (MATRIX[B]) 3 ENTER 1 ENTER 3 ENTER $(-)$ 3 ENTER 13 ENTER 2nd QUIT MODE

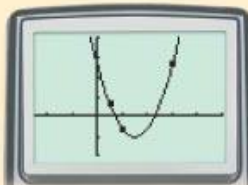


Find the product $A^{-1}B$:

MATRIX NAMES 1:[A] ENTER x^{-1} X MATRIX NAMES 2:[B] ENTER ENTER

Plot points (1, 3), (2, -3), and (6, 13), and make a scatter plot:

Use viewing window $[-5, 10]$ by $[-10, 20]$.



STAT EDIT 1:EDIT ENTER L1 1 ENTER 2 ENTER 6 ENTER L2 3

ENTER (-) 3 ENTER 13 ENTER 2nd Y= STAT PLOT 1:Plot 1

ENTER ON ENTER (Type:) (Xlist:) 2nd L1

(Ylist:) 2nd L2 (Mark:) ENTER GRAPH

TI-82: L2

To graph $f(x) = 2x^2 - 12x + 13$, use a keystroke sequence similar to that in Example 2 of Lesson 5.1.

For Example 2, use a similar keystroke sequence. Use viewing window $[-2, 10]$ by $[-5, 20]$.

EXAMPLE 3 Create a scatter plot of the given data, and find a quadratic model to represent the data.
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Create the scatter plot:

Use a keystroke sequence similar to that in Example 2 of this lesson.

Find a quadratic model:

Use a keystroke sequence similar to that given on page 324.

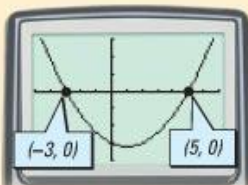
LESSON 5.8

Activity

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For Step 2, use a keystroke sequence similar to that used in the Technology example of Lesson 5.1. Use $TblStart = -2$ and $\Delta Tbl = 1$.

EXAMPLES 1 and 2 For Example 1, graph $y = x^2 - 2x - 15$ and find the zeros of the function.
Pages 331 and 332



Use viewing window $[-5, 7]$ by $[-20, 15]$.

Graph the function:

Use a keystroke sequence similar to that in Example 2 of Lesson 5.1.

Find the zeros of the function:

Use a keystroke sequence similar to that used to find the x -intercepts in Example 3 of Lesson 5.2.

For Example 2, use a similar keystroke sequence. Use viewing window $[0, 25]$ by $[-100, 1500]$.