Appendix B

Commonly-Used Keystrokes for Inequality Graphing

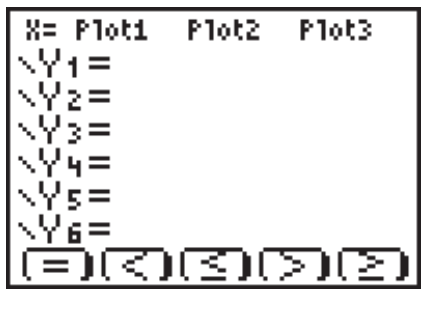
This section outlines keystrokes that you will need to be familiar with to work the activities in this book.

Starting the Inequality Graphing Application

Press APPS. Select **Inequalz**. (This may have a number or letter in front of it depending on the number of applications you have loaded.)

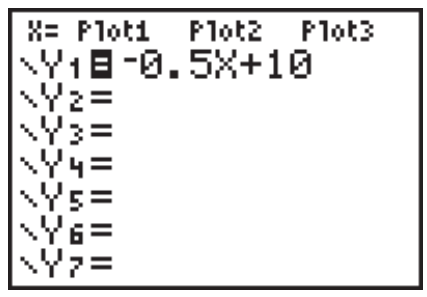
Press any key to continue.

The Inequality Graphing application is now running. You will see the inequality graphing symbols at the bottom of the screen.

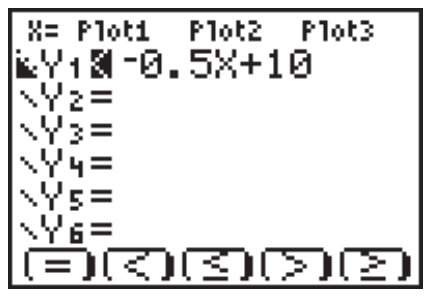


Graphing Inequalities

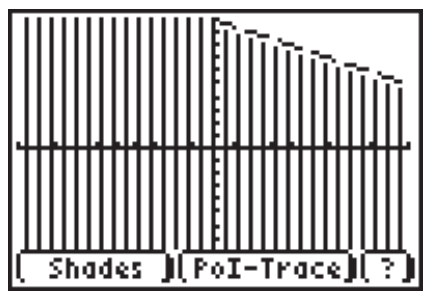
Press [Y=] to access the **Y=** editor. To graph the inequality $y < -0.5x + 10$, enter [(-)] [0] [.] [5] [X,T,Θ,n] [+] [1] [0] to the right of the equal symbol in **Y1=**, just as you normally would to graph an equation.



Place the cursor so that it is positioned on the equal symbol. Select the less than symbol, (**<**), by pressing [ALPHA] [F2].

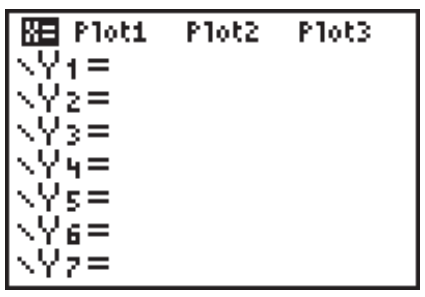


Press [GRAPH].

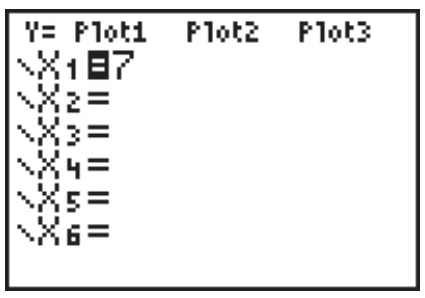


Graphing Vertical Inequalities

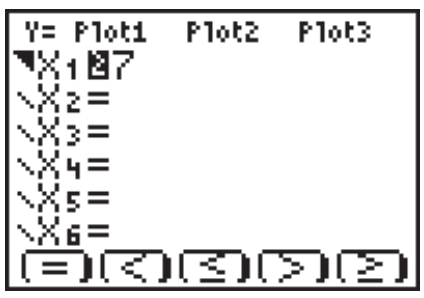
To graph the inequality $x \geq 7$, press [Y=], and then move up to the **X=** icon, which is located at the top left corner of the screen.



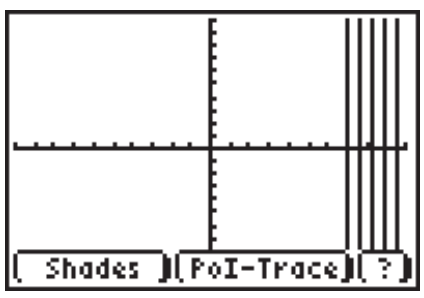
Press [ENTER]. Type [▶] [7].



Place the cursor so that it is positioned on the equal symbol. Select the greater than or equal to symbol, (≥), by pressing [ALPHA] [F5].

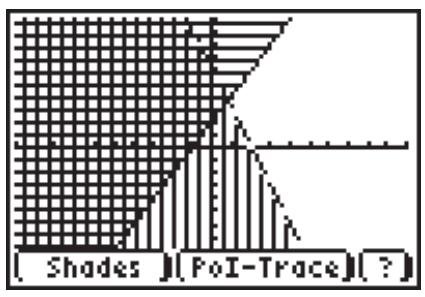


Press [GRAPH].



Operating the Shades Feature

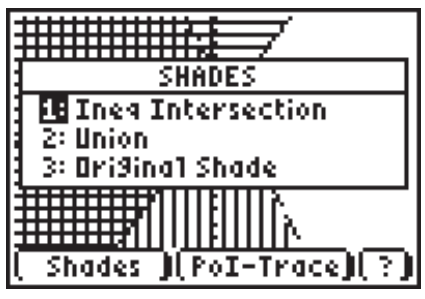
The overlapping segments that indicate common regions can often result in a busy and cluttered image.



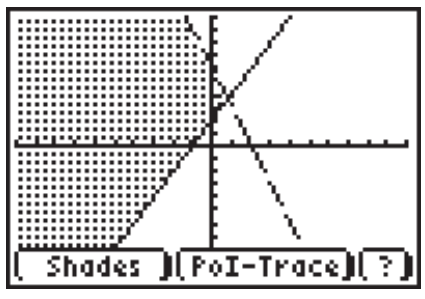
The **Shades** feature enables you to clearly view the intersection region.

After two overlapping inequalities are graphed, press [ALPHA] [F1] to select the **Shades** feature.

Note: *Pressing* [ALPHA] [F2] *also selects the* **Shades** *feature because the* **Shades Menu** *bar appears above both the* [F1] *and* [F2] *keys.*



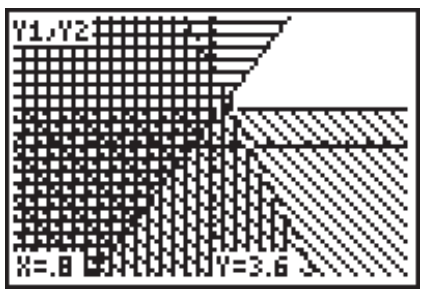
Select **Ineq Intersection**.



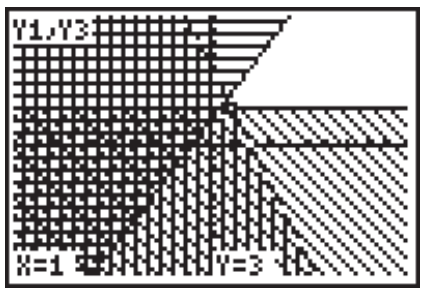
Locating Points-of-Intersection

The **Point-of-Intersection Trace** feature locates intersection points for the lines used in the graph of the system, including the vertices of the feasible region. As with the standard **TRACE** feature, the right and left cursor keys move the cursor along a specific line. The up and down cursor keys shift the tracing cursor from one line to another.

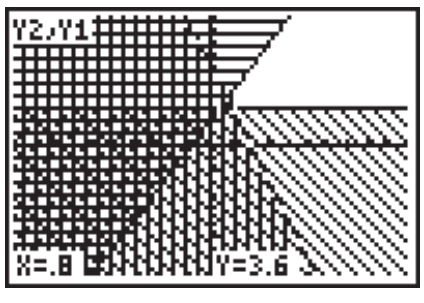
Press [ALPHA] [F3] (or [ALPHA] [F4]) to activate the **Point-of-Intersection Trace** feature. The intersection point for **Y1** and **Y2** appears on your screen, as indicated by the expression in the top right corner of your screen.



Press [▶] to determine the intersection point for **Y1** and **Y3**.



Press [▲] to find points of intersection involving the inequality in **Y2**. The feature initially determines the intersection point for **Y2** and **Y1**, even though this point was previously found. The additional intersection points are found by pressing [▶].

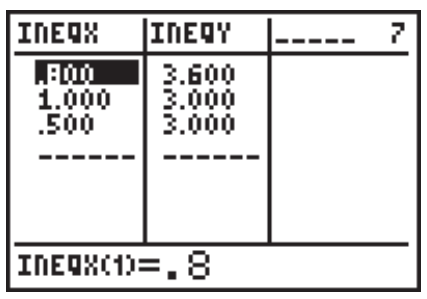


Utilizing the STAT Menu Options

When solving a maximization problem using linear programming, the maximum value occurs at a vertex. The maximum value is found by substituting the vertices of the feasible region into the objective function. The **Point-of-Intersection Trace** feature streamlines this process

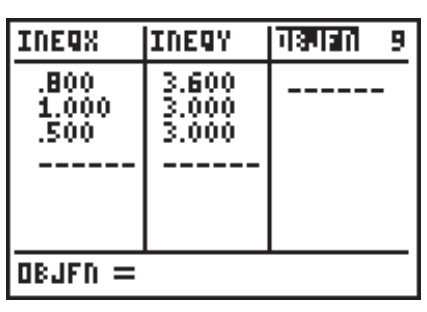
Press [STO▸] when the vertex coordinates appear on the screen. These coordinates are stored into two lists in the graphing handheld, **INEQX** and **INEQY**.

This same process can be repeated for all of the vertices of the feasible region. These lists are viewed by pressing [STAT] **1** to select **1:Edit**.

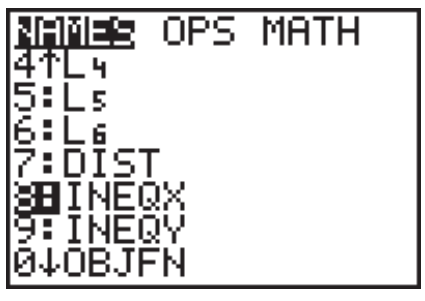


The value of the objective function can be calculated and placed in the list to the right of **INEQX** and **INEQY**.

Move up to the top of the list next to **INEQY**. Type a heading, such as **OBJFN**. Press [ENTER].

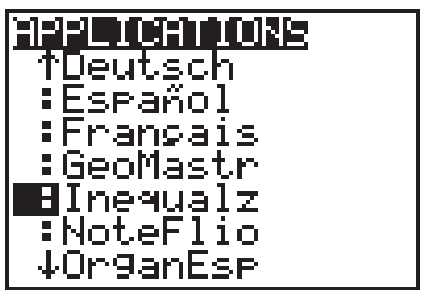


Enter the formula for the objective function. This will require using the list names **INEQX** and **INEQY**. These list names are located by pressing [2nd] [LIST] to access the **LIST > NAMES Menu**. Select **INEQX** or **INEQY** when needed.

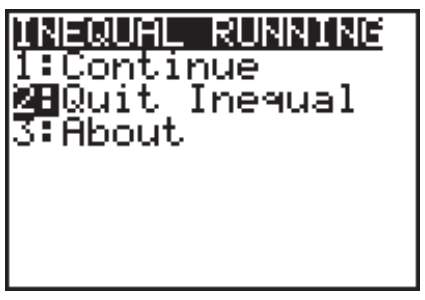


Quitting the Application

The Inequality Graphing application will continue running until it is "turned off." Press [APPS], and then select **Inequalz**.



Select **Quit Inequal**.



Format Settings

Press [2nd] [FORMAT] to view the **FORMAT** settings of the graphing handheld.

These settings determine the appearance of your graph screen. When all the default settings are highlighted, as shown,

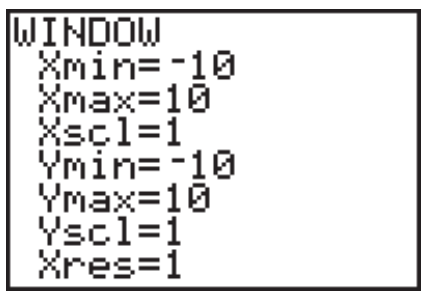
- rectangular trace coordinates are selected
- trace coordinates are displayed
- a grid is not displayed
- the horizontal and vertical axes are shown
- axes labels are not displayed
- equations/inequalities are displayed as they are traced.

To change a setting, such as displaying a grid, move down and then move right to the desired setting. Press ENTER.

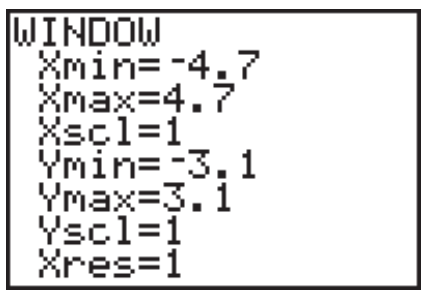
Viewing Windows

Several frequently used windows (the **ZStandard**, **ZDecimal**, and **ZInteger** windows) have been programmed into your graphing handheld. All three are accessed from the **ZOOM Menu** (ZOOM).

To obtain the standard viewing window, which displays a coordinate grid from $x = -10$ to $x = 10$ and $y = -10$ to $y = 10$, press ZOOM **6** to select **6:ZStandard**.



Both the **ZDecimal** and **ZInteger** viewing windows align plotted points with pixels to produce proportional viewing windows and convenient trace values. Press ZOOM **4** to select **4:ZDecimal** to obtain the **ZDecimal** viewing window.



Using the **ZInteger** viewing window requires one additional step. Press ZOOM **8** to select **8:ZInteger**. The crosshairs appear on the graph screen. Use the cursor keys to position the crosshairs at the desired center of the graph, then press ENTER.