



Calculator Appendix J

(Graphing inequalities in two variables)



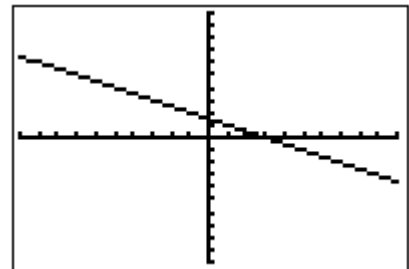
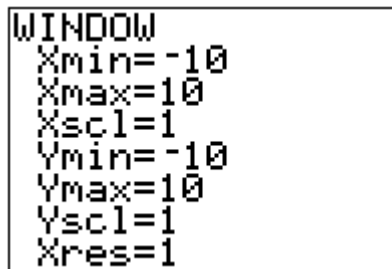
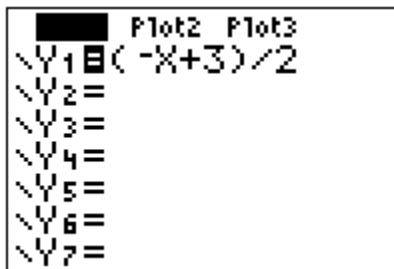
Consider the display of the following inequality on a graphing calculator.

$$x + 2y \geq 3$$

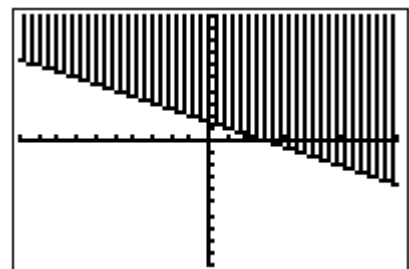
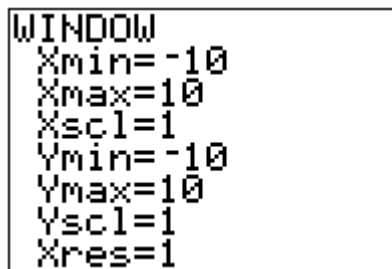
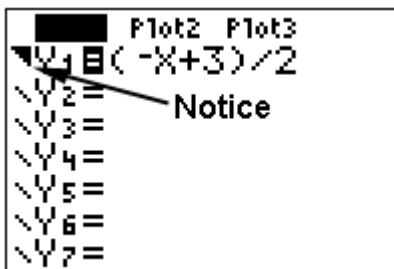
The first step is to solve for y :


$$y \geq (-x + 3)/2$$

Press the **Y=** button on the calculator and enter $(-x + 3)/2$ for **Y1**. Press **GRAPH** and observe that a **line** is graphed:




In order to turn this into a true inequality with a shaded region, use the **LEFT ARROW** to move the cursor to the left of **Y1 =**. Once the cursor is in that position, repeatedly press **ENTER** until this icon (\blacktriangleleft) appears. This causes the function (in this case a line) to be shaded **above**. Press **GRAPH** again and shading will be observed **above** the line.



To graph the inequality $y \leq (-x + 3)/2$ which will require shading **below** the line, use the **LEFT ARROW** to move the cursor to the left of **Y1 =**. Once the cursor is in that position, repeatedly press **ENTER** until this icon () appears. Press **GRAPH** and shading will be observed **below** the line.

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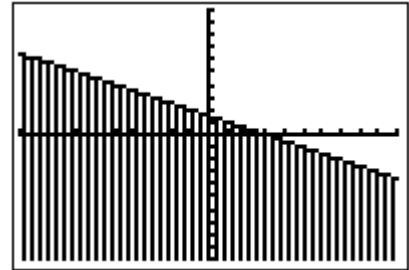
Plot2 Plot3
Y1  (-X+3)/2
Y2=
Y3=
Y4=
Y5=
Y6=
Y7=



```

```

WINDOW
Xmin=-10
Xmax=10
Xscl=1
Ymin=-10
Ymax=10
Yscl=1
Xres=1

```



Similarly, the icons  and  will result in **any function** (not just lines) being shaded respectively above or below the graph.

Think of it this way:

With , **Y1= ...** effectively becomes **Y1 ≥ ...**, and

With , **Y1= ...** effectively becomes **Y1 ≤ ...**