



Graphing Calculator Investigation

A Follow-Up of Lesson 3-3

Sharp EL-9900

Systems of Linear Inequalities

You can graph systems of linear inequalities with a TI-83 Plus calculator using the Y= menu. You can choose different graphing styles to shade above or below a line.

Example Graph the system of inequalities in the standard viewing window.

$$y \geq -2x + 3$$
$$y \leq x + 5$$

Step 1

- Enter $-2x + 3$ as Y1. Since y is greater than $-2x + 3$, the shading is above the line.

KEYSTROKES: -2 $X/\theta/T/n$ $+$ 3 ENTER

Step 2

- Enter $x + 5$ as Y2. Since y is less than $x + 5$, the shading is below the line.

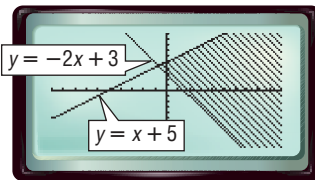
KEYSTROKES: $X/\theta/T/n$ $+$ 5 ENTER

- Display the graph of both lines by pressing **ZOOM** 5.

Step 3

- Complete the graph by selecting the boundaries for the shading.

KEYSTROKES: 2^{nd} F [DRAW] ALPHA [G] 1 2^{nd} F [VARS] ALPHA [A] ENTER ALPHA [A] 1 \blacktriangleright 2^{nd} F [VARS] ENTER 2 **GRAPH**



$[-10, 10]$ scl: 1 by $[-10, 10]$ scl: 1

The shaded region is the intersection of the shading above the line $y = -2x + 3$ and the shading below the line $y = x + 5$. This region includes all the points that satisfy the system $y \geq -2x + 3$ and $y \leq x + 5$.

Exercises 1–8. See pp. 151A–151F.

Solve each system of inequalities. Sketch each graph on a sheet of paper.

1. $y \geq 4$
 $y \leq -x$

2. $y \geq -2x$
 $y \leq -3$

3. $y \geq 1 - x$
 $y \leq x + 5$

4. $y \geq x + 2$
 $y \leq -2x - 1$

5. $3y \geq 6x - 15$
 $2y \leq -x + 3$

6. $y + 3x \geq 6$
 $y - 2x \leq 9$

7. $6y + 4x \geq 12$
 $5y - 3x \leq -10$

8. $\frac{1}{4}y - x \geq -2$
 $\frac{1}{3}y + 2x \leq 4$



www.algebra2.com/other_calculator_keystrokes