

Graphing Calculator Lab

Systems of Linear Inequalities

You can graph systems of linear inequalities with a TI-73 Explorer graphing 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 or equal to $-2x + 3$, shade above the line.


KEYSTROKES: -2 $+$ 3

- Use the left arrow key to move your cursor as far left as possible. Highlight the graph style icon. Press **ENTER** until the shade above icon, , appears.

Step 2

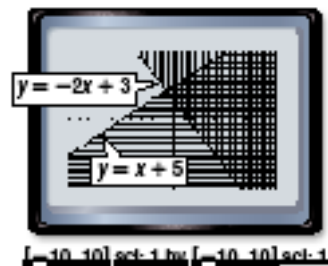
- Enter $x + 5$ as Y2. Since y is less than or equal to $x + 5$, shade below the line.

KEYSTROKES: $+$ 5

- Use the arrow and **ENTER** keys to choose the shade below icon, .

Step 3

- Display the graphs by pressing **2ND** **GRAPH**. Notice the shading pattern above the line $y = -2x + 3$ and the shading pattern below the line $y = x + 5$. The intersection of the graphs is the region where the patterns overlap. This region includes all the points that satisfy the system $y \geq -2x + 3$ and $y \leq x + 5$.



EXERCISES

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