

**Systems of Inequalities** The solution of a system of inequalities is the set of all ordered pairs that satisfy both inequalities. If you graph the inequalities in the same coordinate plane, the solution is the region where the graphs overlap.

*Example 1.*

**Solve the system of inequalities**

**by graphing.**

$$\begin{cases} y > x + 2 \\ y \leq -2x - 1 \end{cases}$$

**Example 1**

Solve the system of inequalities

by graphing.

$$\begin{cases} y > x + 2 \\ y \leq -2x - 1 \end{cases}$$

$$y > x + 2$$

$$\begin{array}{r|l|l} x & 0 & -2 \\ y & 2 & 0 \end{array}$$

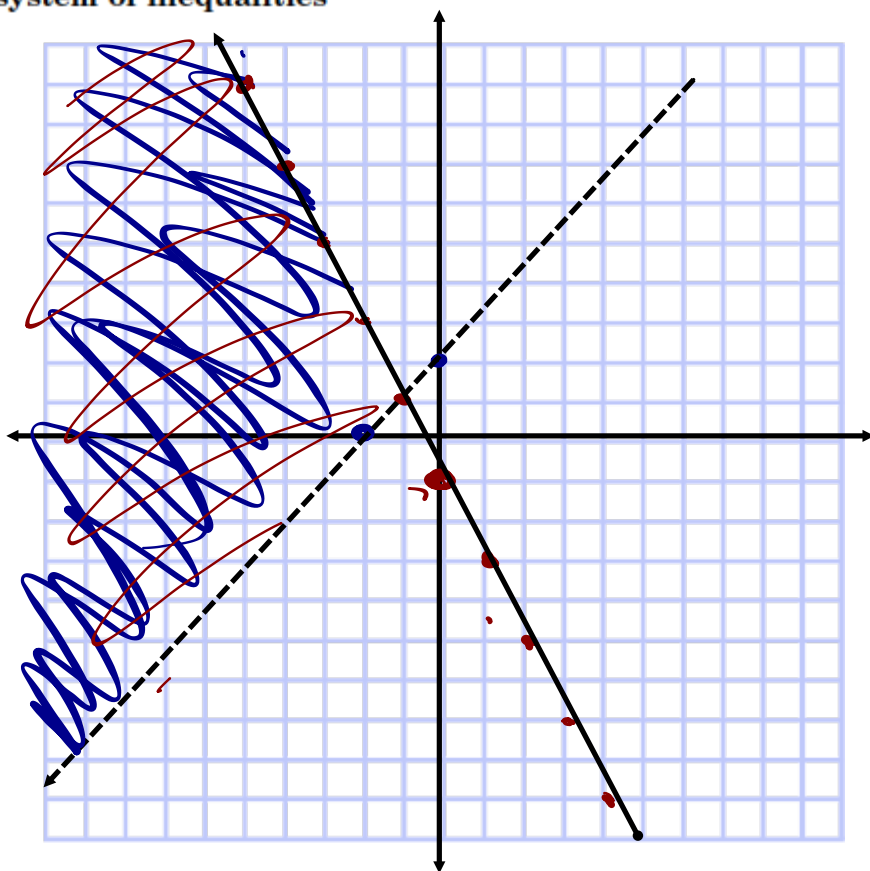
$$(0) > (0) + 2$$

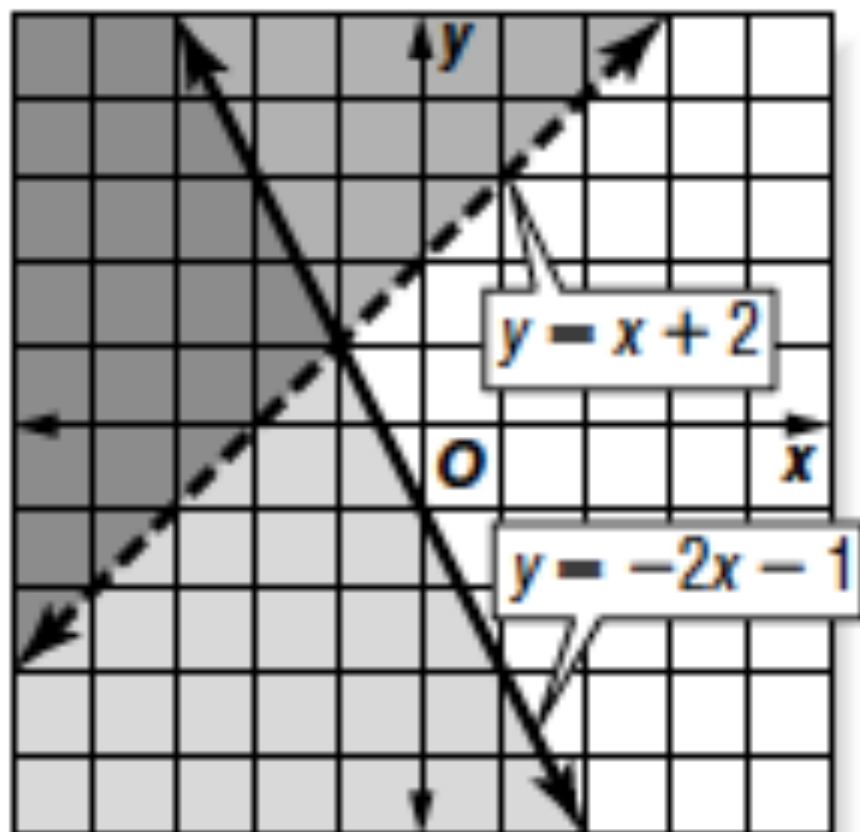
$$0 > 2 \text{ NO}$$

$$y \leq -2x - 1$$

$$(0) \leq -2(0) - 1$$

$$0 \leq -1 \text{ NO}$$





**Example 2****Solve the system of inequalities****by graphing.**

$$\begin{cases} x + y > 4 \\ x + y < -1 \end{cases}$$

$$x + y > 4$$

$$\begin{array}{r|rr|r} x & 0 & 4 & \\ \hline y & 4 & 0 & \end{array}$$

$$(0) + (0) > 4$$

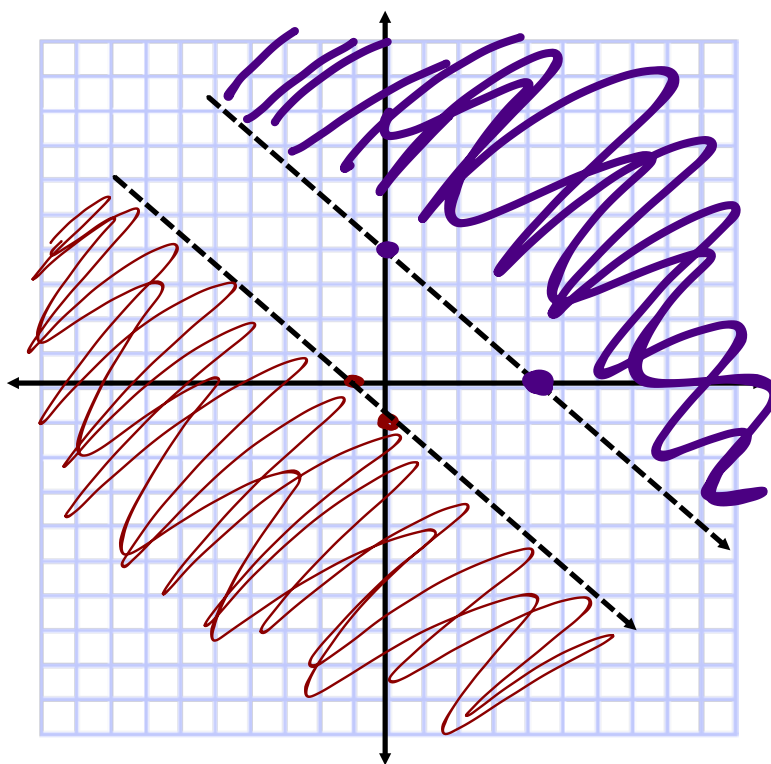
$$0 > 4 \text{ NO}$$

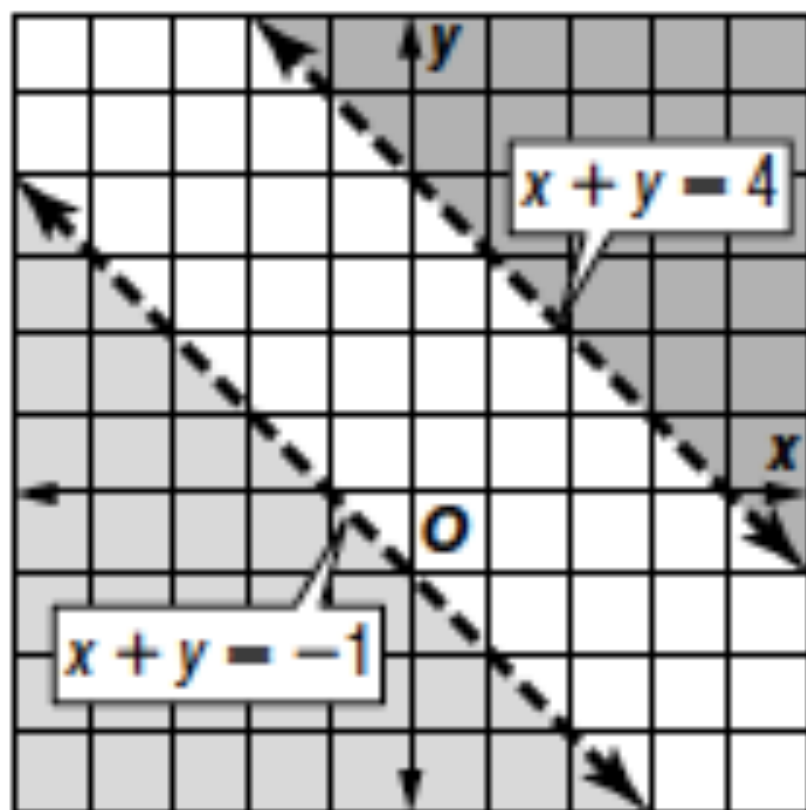
$$x + y < -1$$

$$\begin{array}{r|rr|r} x & 0 & -1 & \\ \hline y & -1 & 0 & \end{array}$$

$$(0) + (0) < -1$$

$$0 < -1 \text{ NO}$$

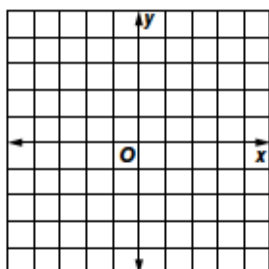




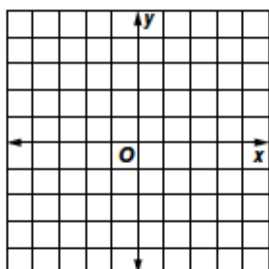
**Exercises**

Solve each system of inequalities by graphing.

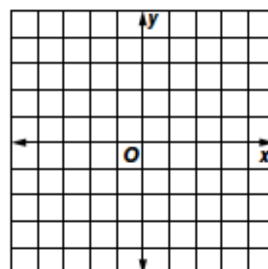
1.  $y > -1$   
 $x < 0$



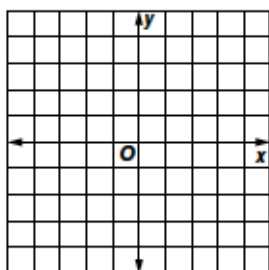
2.  $y > -2x + 2$   
 $y \leq x + 1$



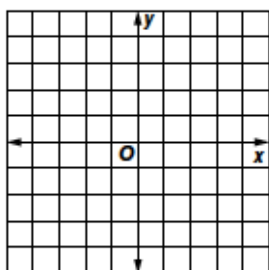
3.  $y < x + 1$   
 $3x + 4y \geq 12$



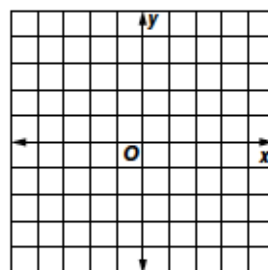
4.  $2x + y \geq 1$   
 $x - y \geq -2$



5.  $y \leq 2x + 3$   
 $y \geq -1 + 2x$



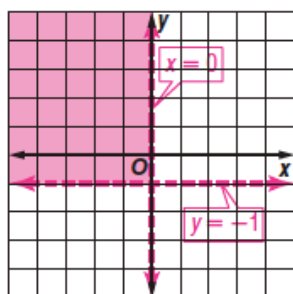
6.  $5x - 2y < 6$   
 $y > -x + 1$



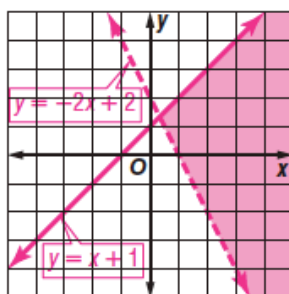
### Exercises

Solve each system of inequalities by graphing.

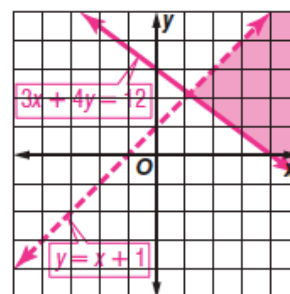
1.  $y > -1$   
 $x < 0$



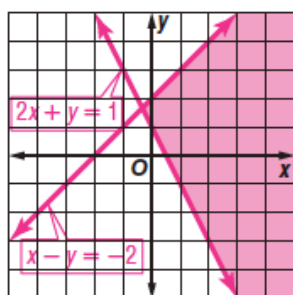
2.  $y > -2x + 2$   
 $y \leq x + 1$



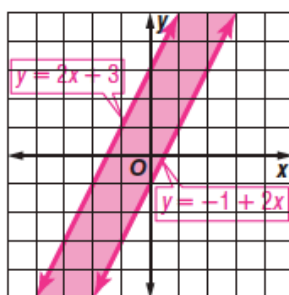
3.  $y < x + 1$   
 $3x + 4y \geq 12$



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



5.  $y \leq 2x + 3$   
 $y \geq -1 + 2x$



6.  $5x - 2y < 6$   
 $y > -x + 1$

