Lesson 6-8

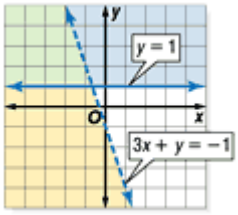
Example 1 Solve by Graphing

a. Solve the system of inequalities by graphing.

$y \geq 1$

$3x + y < -1$

The solution includes the ordered pairs in the intersection of the graphs of $y \geq 1$ and $3x + y < -1$. This region is shaded in green at the right. The graphs of $y = 1$ and $3x + y = -1$ are boundaries of this region. The graph of $y = 1$ is included in the graph of $y \geq 1$. The graph of $3x + y = -1$ is dashed and is *not* included in the graph of $3x + y < -1$.

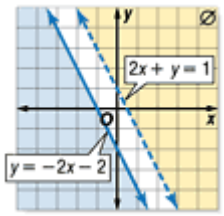


b. Solve the system of inequalities by graphing.

$2x + y > 1$

$y \leq -2x - 2$

The graphs of $2x + y = 1$ and $y = -2x - 2$ are parallel lines. Because the two regions have no points in common, the system of inequalities has no solution.



Example 2 Use a System of Inequalities to Solve a Problem

For a child to be eligible to ride the Wild Slide Ride at an amusement park, the following restrictions must be met.

- **between the ages of 5 and 9, inclusive**
- **between 30 and 50 inches in height, inclusive**

Graph the range of children that may ride the Wild Slide Ride.

Words The age is between 5 and 9 years, inclusive. The height is between 30 and 50 inches, inclusive.

Variables Let a = the age and h = the height

Inequalities $5 \leq a \leq 9$

$30 \leq h \leq 50$

The solution is the set of all ordered pairs whose graphs are in the intersection of the graphs of these inequalities.