

THE SOLUTION REGION In Example 1, the half-plane for each inequality is shaded, and the solution region is the intersection of the half-planes. From this point on, only the solution region will be shaded.

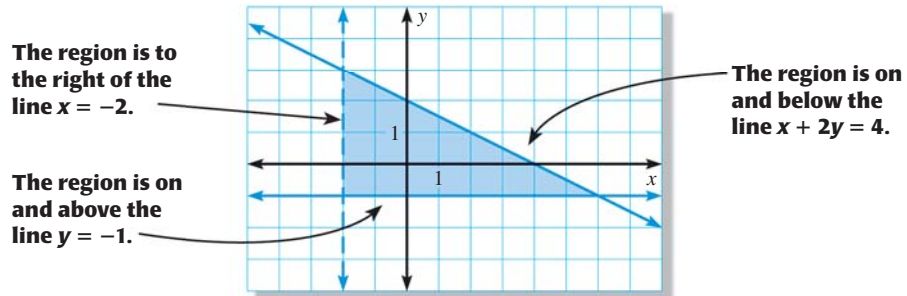
EXAMPLE 2 Graph a system of three linear inequalities

Graph the system of inequalities.

$y \geq -1$	Inequality 1
$x > -2$	Inequality 2
$x + 2y \leq 4$	Inequality 3

Solution

Graph all three inequalities in the same coordinate plane. The graph of the system is the triangular region shown.



GUIDED PRACTICE for Examples 1 and 2

Graph the system of linear inequalities.

- | | | |
|--|--|--|
| <p>1. $y < x - 4$
$y \geq -x + 3$</p> | <p>2. $y \geq -x + 2$
$y < 4$
$x < 3$</p> | <p>3. $y > -x$
$y \geq x - 4$
$y < 5$</p> |
|--|--|--|

EXAMPLE 3 Write a system of linear inequalities

Write a system of inequalities for the shaded region.

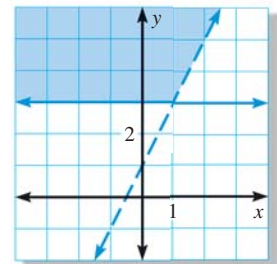
Solution

INEQUALITY 1: One boundary line for the shaded region is $y = 3$. Because the shaded region is *above* the *solid* line, the inequality is $y \geq 3$.

INEQUALITY 2: Another boundary line for the shaded region has a slope of 2 and a y -intercept of 1. So, its equation is $y = 2x + 1$. Because the shaded region is *above* the *dashed* line, the inequality is $y > 2x + 1$.

► The system of inequalities for the shaded region is:

$y \geq 3$	Inequality 1
$y > 2x + 1$	Inequality 2



REVIEW EQUATIONS OF LINES

For help with writing an equation of a line, see pp. 283, 302, and 311.