

7.6

Solve Linear Systems of Linear Inequalities

Goal

- Solve systems of linear inequalities in two variables.

Your Notes

VOCABULARY

System of linear inequalities

Solution of a system of linear inequalities

Graph of a system of linear inequalities

GRAPHING A SYSTEM OF LINEAR INEQUALITIES

Step 1 _____ each inequality.

Step 2 Find the _____ of the graphs. The graph of the system is this intersection.

Your Notes

Example 1 Graph a system of three linear inequalities

Graph the system of inequalities.

$$y > 1 \quad \text{Inequality 1}$$

$$x \leq 4 \quad \text{Inequality 2}$$

$$3y < 6x - 6 \quad \text{Inequality 3}$$

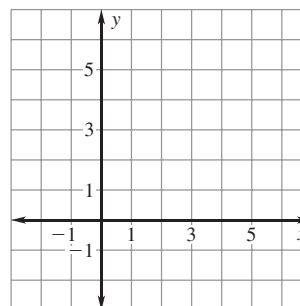
Solution

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

The region is _____ the line
 $y = 1$.

The region is _____
_____ of the line $x = 4$.

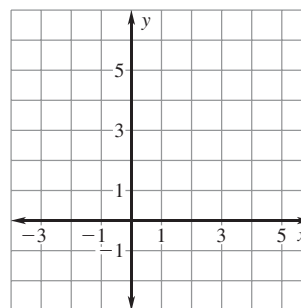
The region is _____ the line
 $3y = 6x - 6$.



✓ Checkpoint Graph the system of linear equations.

$$1. \ x + y \leq 5$$

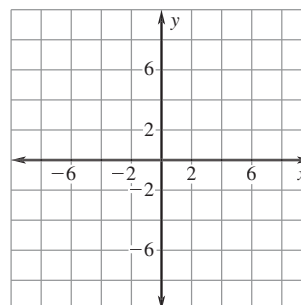
$$y < x + 3$$



$$2. \ x > -2$$

$$y \leq 4$$

$$3x + 4y \leq 24$$



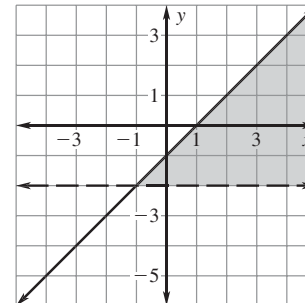
Your Notes

Example 2 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 _____. Because the shaded region is _____ the _____ line, the inequality is _____.



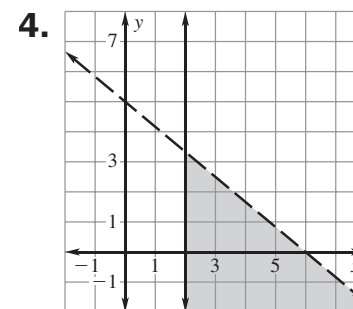
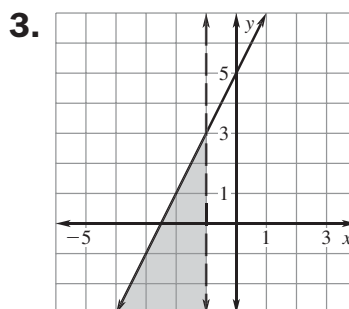
Inequality 2 Another boundary line for the shaded region has a slope of ____ and a y-intercept of _____. So, its equation is _____. Because the shaded region is _____ the _____ line, the inequality is _____.

The system of inequalities for the shaded region is:

_____ Inequality 1

_____ Inequality 2

✓ **Checkpoint** Write a system of inequalities that defines the shaded region.



Homework