Name: Date: Period:

Solving a System of Inequalities

A system of inequalities is graphing two or more inequalities on the same axes. The solution set, marked with an "S", is the area of the graph where the **shading intersects**. Using two different colored pencils illustrates this very well.

Example #1:
Graph the following two inequalities on the same axes:

$$x + y \geq 4$$
$$y \leq 2x - 3$$

Pick a point in the solution set and check it in **BOTH** inequalities.

Example #2:
Graph the following system of inequalities

$$y > -4$$
$$x \leq 3$$

Is the point (-2, -4) a solution to this problem? Explain.

Is the point (3, 2) a solution to this problem? Explain.

Example #3:
Solve the following system of linear inequalities graphically:

$$x + 2y \leq 8$$
$$y < x + 4$$

Name a point in the solution set and check it.

Example #4:
Solve the following system of linear inequalities graphically:

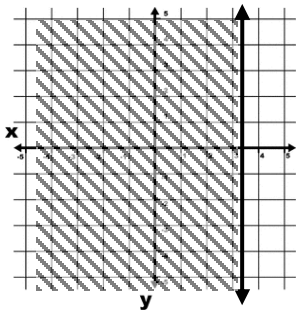
$$y \geq x$$
$$y < 2x + 3$$

Name a point in the solution set and check it.

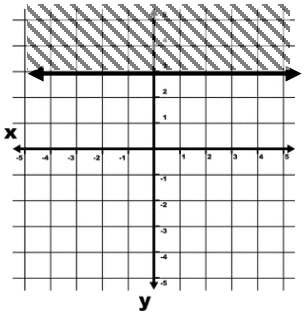
Answer the following questions:

1. Which of the graph represents the graph of the inequality $x \leq 3$?

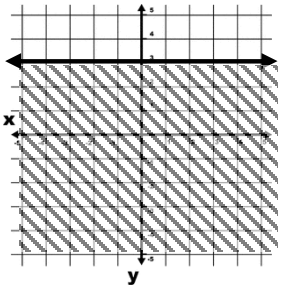
(a)



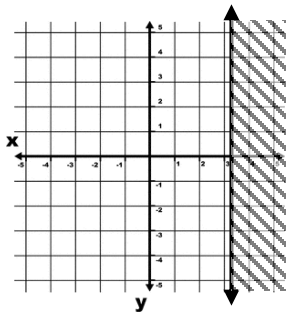
(c)



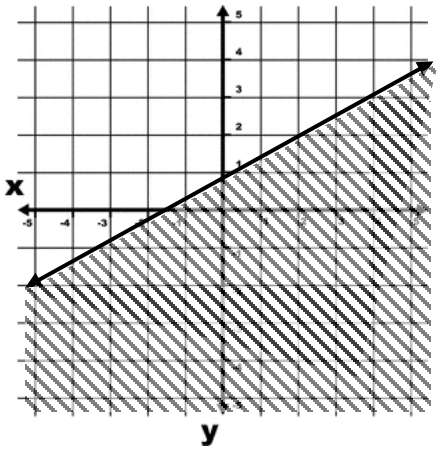
(b)



(d)



2. The graph shown at the right is the graph of:



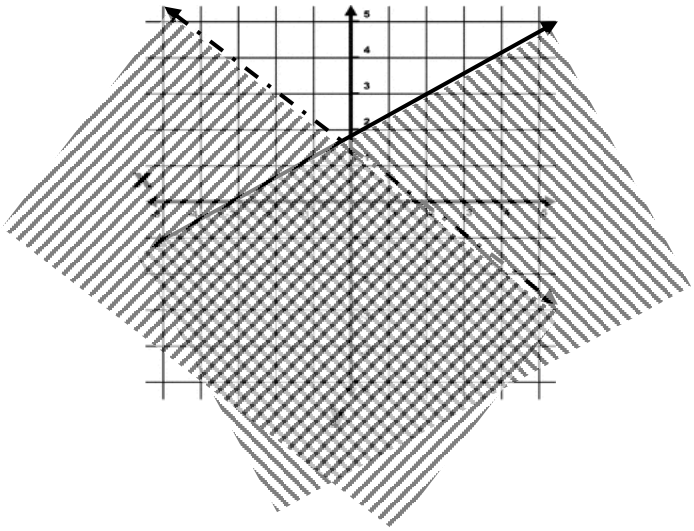
(a) $y \geq \frac{1}{2}x+1$

(b) $y > \frac{1}{2}x+1$

(c) $y \leq \frac{1}{2}x+1$

(d) $y < \frac{1}{2}x+1$

3. Which ordered pair is not in the solution set of the system of inequalities shown in the accompanying graph?



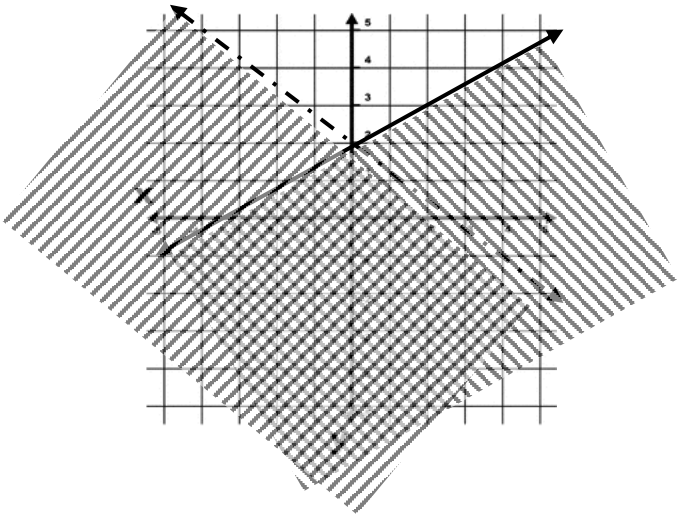
(a) (-2, 0)

(b) (0, -2)

(c) (2, 0)

(d) (3, -4)

4. Which ordered pair is in the solution set of the system of inequalities shown in the accompanying graph?



(a) (5, 2)

(b) (2, 0)

(c) (1, -5)

(d) (-5,2)