

Algebra II

2.5 Graphing Linear Inequalities

Linear Inequality in Two Variables: $a_1x \pm b_2y \lesseqgtr C$

Solution: The solution is multiple ordered pairs $(\underset{1}{x}, \underset{2}{y})$

KEY CONCEPT

For Your Notebook

Graphing a Linear Inequality

Review

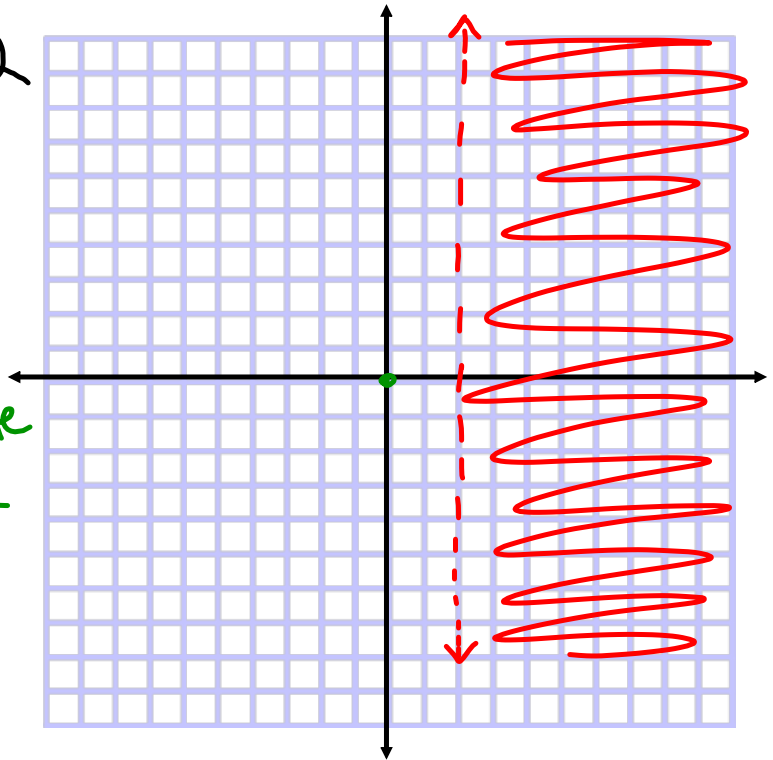
- STEP 1** **Graph** the boundary line for the inequality. Use a dashed line for $<$ or $>$ and a solid line for \leq or \geq .
- STEP 2** **Test** a point *not* on the boundary line to determine whether it is a solution of the inequality. If it is a solution, shade the half-plane containing the point. If it is not a solution, shade the other half-plane.

Graph $x > 2$

Graph $x = 2$
dashed

Test pt
(0,0)

$0 > 2$
False
shade the opposite
side of the line



Graph

$$5x - 2y \leq -4$$

(Handwritten annotations: $-5x$ under $5x$, $-5x$ under -4 , and y circled in red)

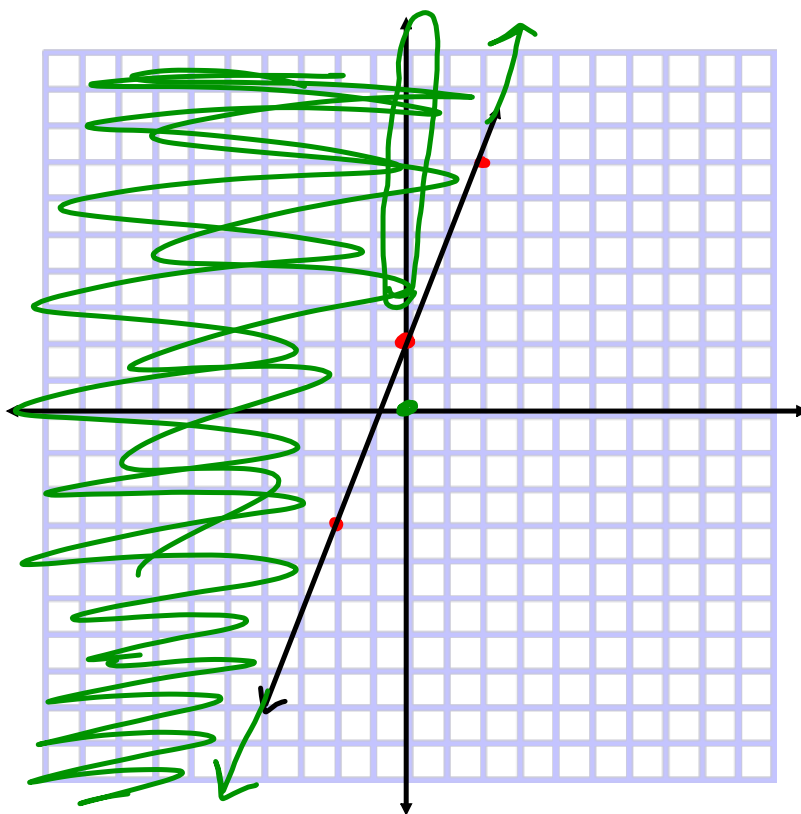
flip
$$\frac{-2y}{-2} \leq \frac{-5x - 4}{-2}$$

solid line

$$y \geq \frac{5}{2}x + 2$$

↓ 5 rise ↑ 5
← 2 run → 2 *y-int 1st*

$(0,0)$ $5(0) - 2(0) \leq -4$
 $0 \leq -4$



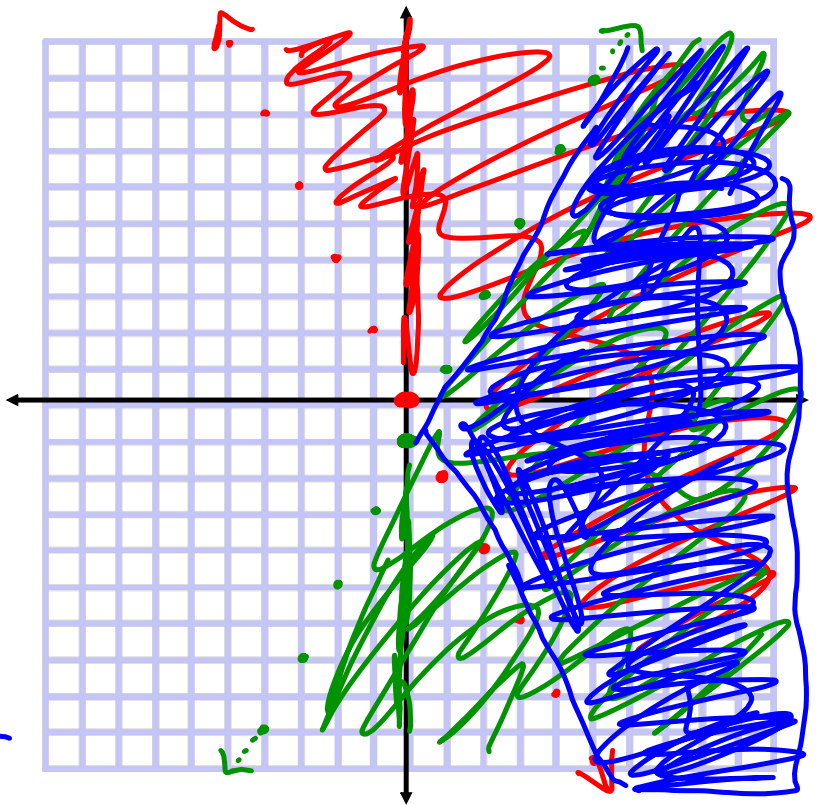
Graph

$$y > -\frac{2}{1}x + 0$$

$$2x - y > 1$$

$$\begin{aligned} \text{for } -y > -2x + 1 \\ y < 2x - 1 \end{aligned}$$

Overlapping part
is the answer



Try this:

Graph

$$x + 2y < 2$$

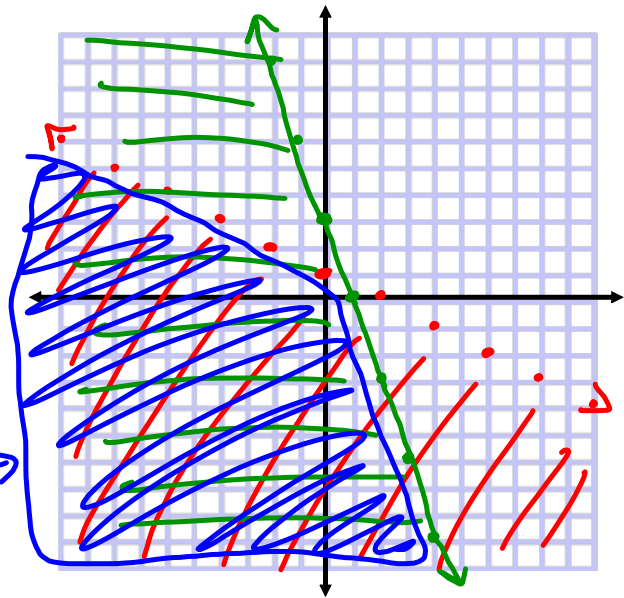
$$3x + y \leq 3$$

$$y \leq -3x + 3$$

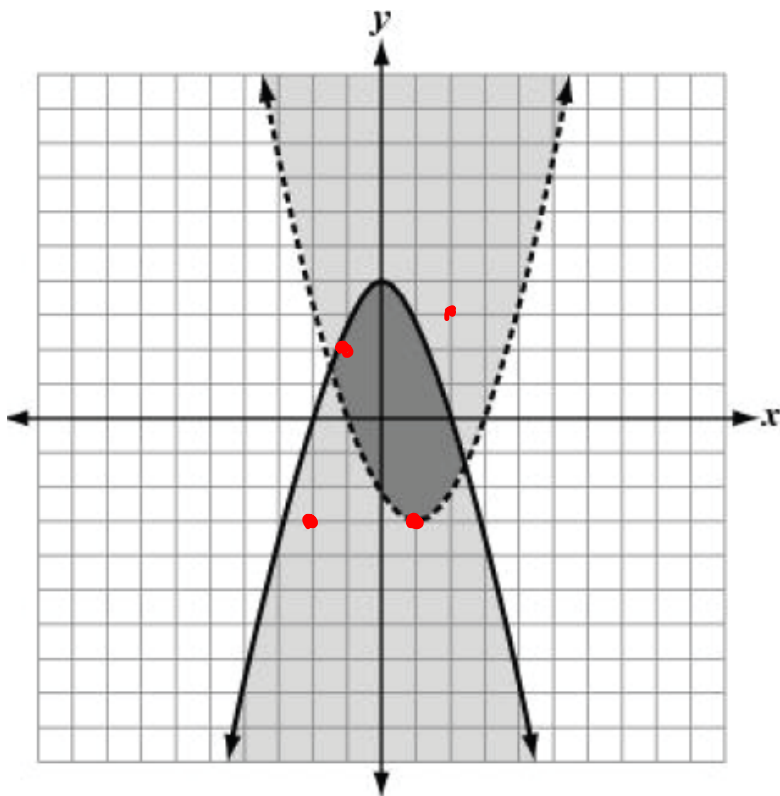
Overlap is
answer

$$2y < -x + 2$$

$$y < -\frac{1}{2}x + 1$$



Which ordered pair is a solution to the graphed system?



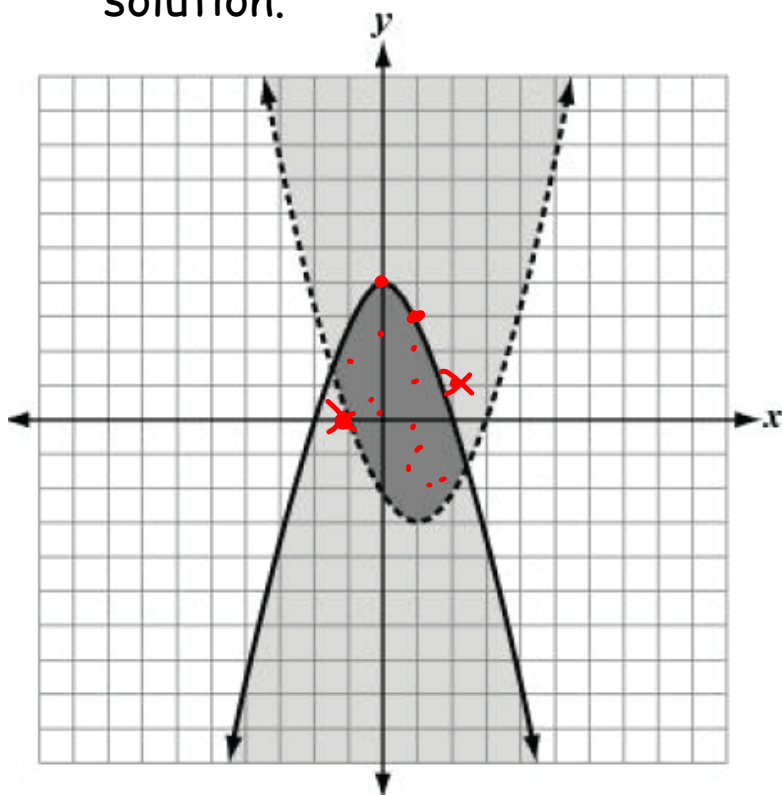
A) $(-2, -3)$

B) $(-1, 2)$

C) $(1, -3)$

D) $(2, 3)$

1. Name a point on a boundary that **IS** part of the solution.
2. Name a point on a boundary that is **NOT** part of the solution.



IS (0,0) (0,4)
 (1,1)
 (1,3)

IS NOT

(7,70)

(5,50) (-1,0)

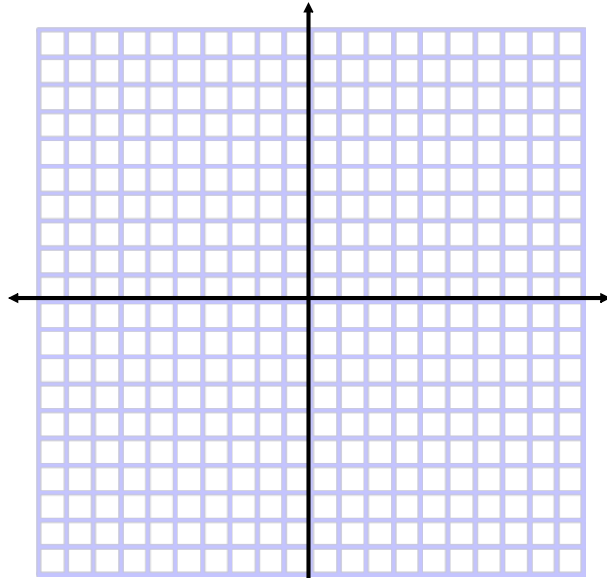
(2,1)

Algebra 2
2.5 Graphing Linear Inequalities

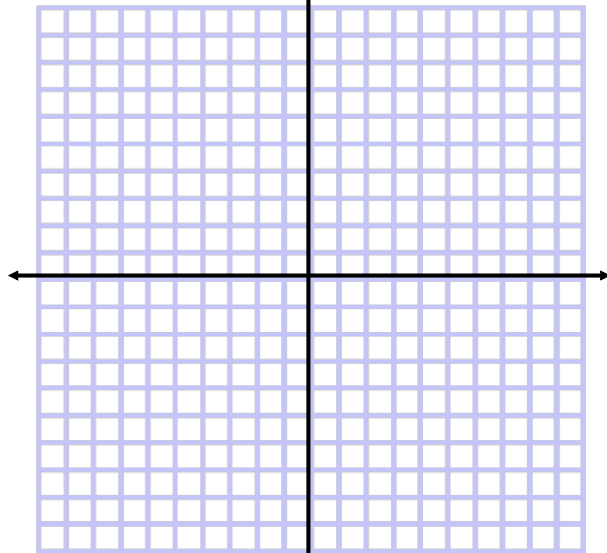
Name: _____ Date: _____ Hr: _____

Graph the solution.

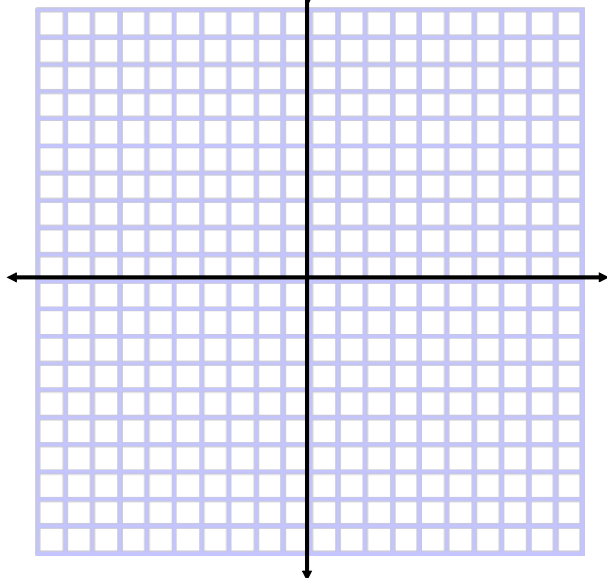
1) $x + 4y > 12$



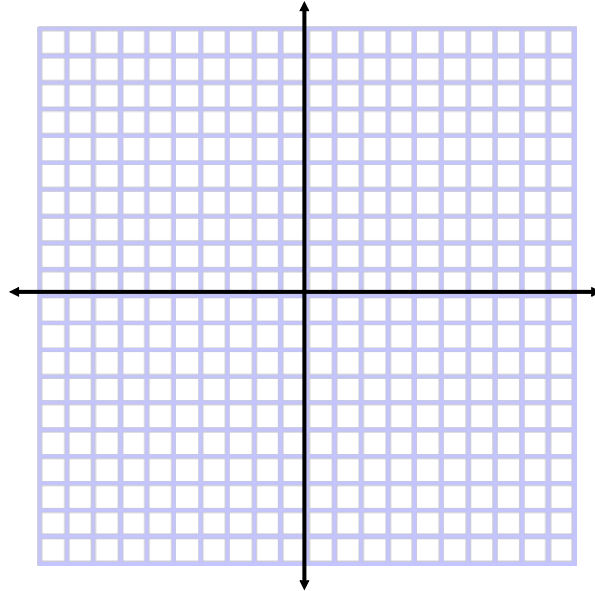
2) $2x + 5y \leq -10$



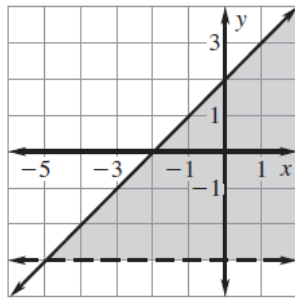
3) $x + y < 1$
& $-2x + 3y < -6$



4) $x + y < 2$
 & $3x + y \leq 3$

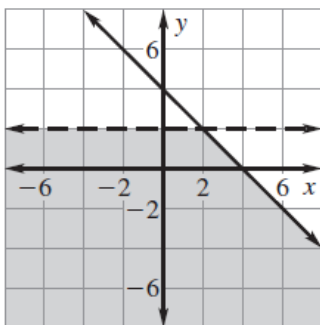


5) Choose the point that is a solution to the system of inequalities graphed below.



- A. (-1, -3)
- B. (1, -3)
- C. (-5, -3)
- D. (-3, -1)

6) Choose the point that is **NOT** a solution to the system of inequalities graphed below.



- A. (-2, -3)
- B. (-2, 2)
- C. (-4, 1)
- D. (2, -2)

7a) Name a point on a boundary line that IS part of the solution.

b) Name a point on a boundary line that is NOT part of the solution.

