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Wednesday, January 31, 2018 10:10 AM

5.3 Homework

1. When would the boundary line of the graph of a linear inequality be dashed?

When the symbol is $<$ or $>$

When would it be solid?

When the symbol is $\geq$ or $\leq$

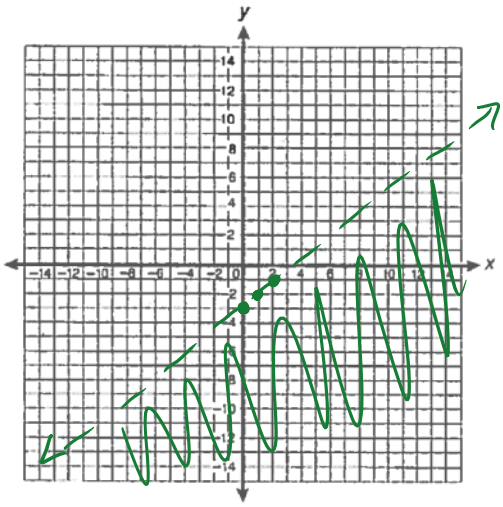
2. How do you know whether to shade above or below the line when graphing an inequality on the coordinate plane?

If $y<$ or $\leq$ it is below

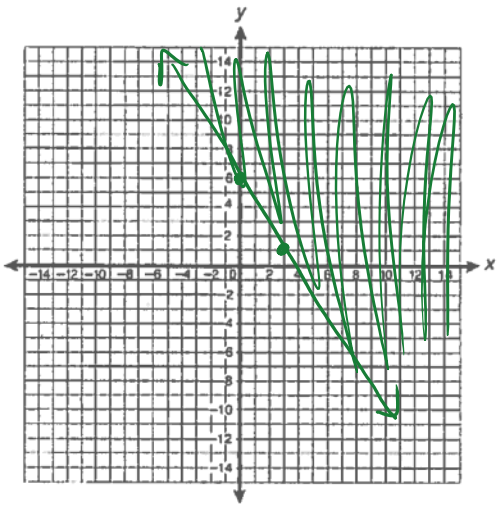
If $y>$ or $\geq$ it is above

Sketch the graph of the inequality.
Say if each is
a. open or closed half plane
b. above or below the graph

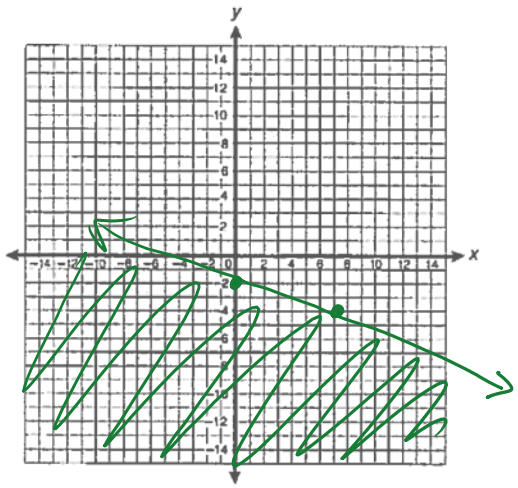
3. $y < x - 3$



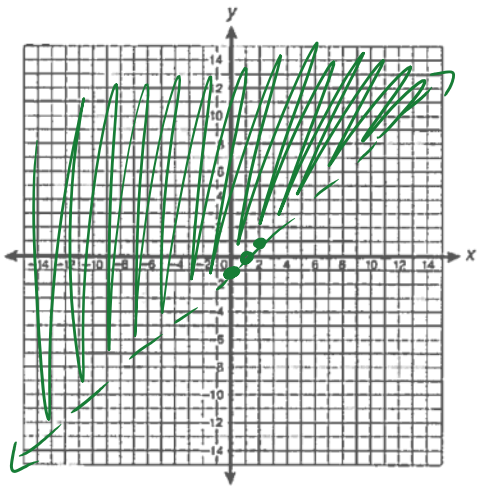
4. $y \geq -\frac{5}{3}x + 6$



5. $y \leq \frac{-2}{7}x - 2$



6. $y > x - 1$



8. Which ordered pair is not a solution of the inequality $3x - 2y < 12$?

X (1, 3) b. (8, 3) c. (6, 4) d. (-6, -4)

$3(1)-2(3)<12$ $3(8)-2(3)<12$

$-3<12$ $18<12$

10. Which ordered pair is a solution of the inequality $4x + 5y \leq 12$?

a. (-2, -6) b. (11, -1) c. (5, 4) d. (4, 5)

$4(-2)+5(-6)\leq 12$

$-8-12\leq 12$

$-20\leq 12$

5.4 Notes: Graphing Systems of Linear Inequalities

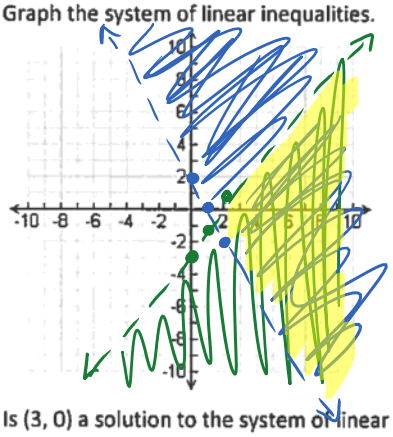
Systems of Linear Inequalities: two or more linear inequalities… A solution to a system of linear inequalities is an ordered pair that makes ALL the inequalities true statements.

We graph systems of linear inequalities just like we graphed a linear inequality in 4.5, but now there are two lines and the shading will need to overlap to produce a solution!

Problem 1: Using $\begin{matrix} y < 2x - 3 \\ 2x + y > 2 \end{matrix}$, find what is asked.

A) Graph the system of linear inequalities.

$2x+y>2$
$-2x \quad -2x$
$y>-2x+2$



B) Is (3, 0) a solution to the system of linear inequalities? Explain.

yes, because it is where shading overlaps

C) Is (1, −3) a solution to the system of linear inequalities? Explain.

NO, because it is not where shading overlaps

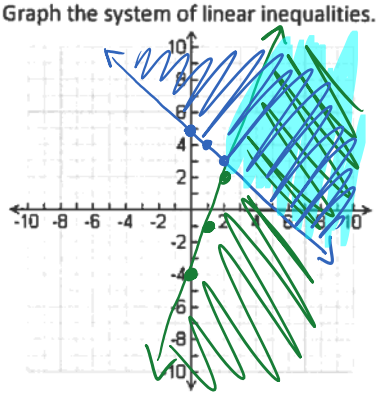
Problem 2: What system of linear inequalities is represented by the graph below?

$y \leq x + 2$

$y < -\frac{1}{3}x$

Problem 3: Using $\begin{matrix} y \geq -x+5 \\ -3x+y \leq -4 \end{matrix}$, find what is asked.

A) Graph the system of linear inequalities.



$-3x+y \leq -4$
$+3x \quad +3x$
$y \leq 3x-4$

B) Is (0, 0) a solution to the system of linear inequalities? Explain.

NO, not in the feasible region

C) Is (1, 4) a solution to the system of linear inequalities? Explain.

NO, not in feasible region

Problem 4: What system of linear inequalities is represented by the graph below?

$x =$
$x <$

$x < 1$
$y < \frac{-3}{2}x + 3$

Problem 5: Determine whether the ordered pair is a solution of the given system.

a) (2, 12) (x, y)
$y > 2x + 4$
$y < 3x + 7$

yes

$12 > 2(2)+4$
$12 > 8$ ✓
$12 < 3(2)+7$
$12 < 13$ ✓

b) (8, 2)
$3x - 2y \leq 17$
$0.3x + 4y > 9$

NO

$3(8)-2(2) \leq 17$
$20 \leq 17$ X

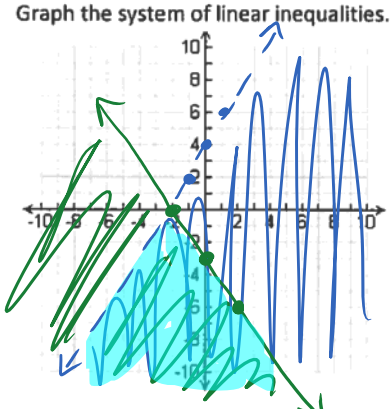
c) (−3, 17) (x, y)
$y > -5x + 2$
$y \geq -3x + 7$

NO

$17 > -5(-3)+2$
$17 > 17$ X

Problem 6: Using $\begin{matrix} y < 2x + 4 \\ -3x - 2y \geq 6 \end{matrix}$, find what is asked.

A) Graph the system of linear inequalities.



$-3x - 2y \geq 6$

$-3x \quad +3x$

$\frac{-2y}{-2} \geq \frac{3x + 6}{-2}$

$y \leq -\frac{3}{2}x - 3$

B) Is (0, 0) a solution to the system of linear inequalities? Explain.

NO

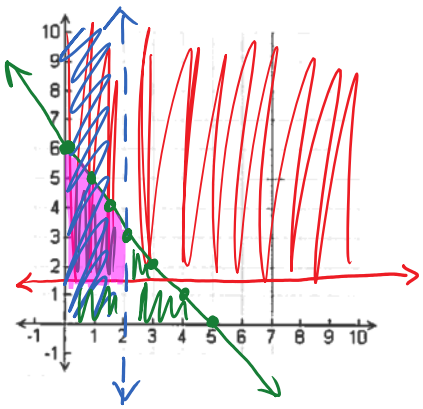
C) Is (4, −3) a solution to the system of linear inequalities? Explain.

NO

Problem 7: You are planning what to do after school. You can spend at most 6 hours daily playing basketball and doin homework. You want to spend less than 2 hours playing basketball. You must spend at least 1 ½ hours on homework. What are possible combinations on how you can manage your time?

x = hours of bball

y = hours of hmw



$x + y \leq 6$

$x < 2$

$y \geq 1.5$

$x + y \leq 6$

$-x \quad -x$

$y \leq -x + 6$

(1,4) → 1 hr bball, 4 hrs hmw

(0,6) → 0 hrs bball, 6 hrs hmw

(1.5,3) → 1.5 hrs bball, 3 hrs hmw

Problem 8: How can you determine whether an ordered pair is a solution of a system of linear inequalities?