Name: Key

Math 9R Homework: Graphing Review

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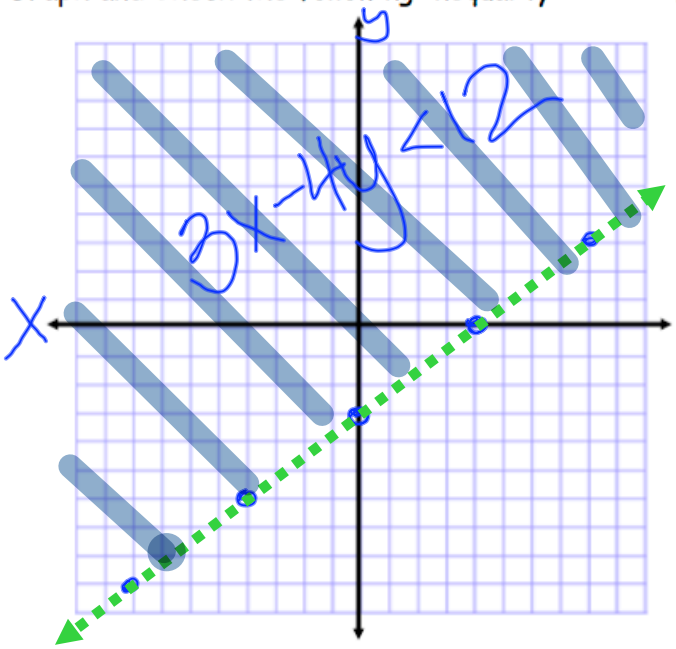
$y > \frac{3}{4}x - 3$

1. Graph and Check the following inequality: $3x - 4y < 12$



Check - = (8,3)

$3x-4y=12$

$3(8)-4(3)=12$

$12=12$ ✓

Check - Shaded (0,0)

$3x-4y<12$

$3(0)-4(0)<12$

$0<12$ T ✓

2. A line passes through the points $(2, -4)$ and $(-6, 5)$. What is the slope of this line?

x_1, y_1 x_2, y_2

$$m = \frac{y_1 - y_2}{x_1 - x_2}$$

$$m = \frac{-4 - 5}{2 - -6}$$

$$m = \frac{-9}{8}$$

True or False (circle):

3a. To find the x intercept, substitute zero for the x variable. True or False

you sub in zero for y

3b. A horizontal line has an undefined slope. True or False

It has a slope of zero

3c. The point (-4, 10) is a solution for the line y = -2x + 2. True or False

$10 = -2(-4)+2$

$10 = 8+2$

$10 = 10$ ✓

4. What are the x and y intercepts of the line $2x + y = 2$? Explain your answer algebraically.

x-intercept: $(1, 0)$

y-intercept: $(0, 2)$

x-intercept

$2x + y = 2$

$2x + 0 = 2$

$2x = 2$

$x = 1$

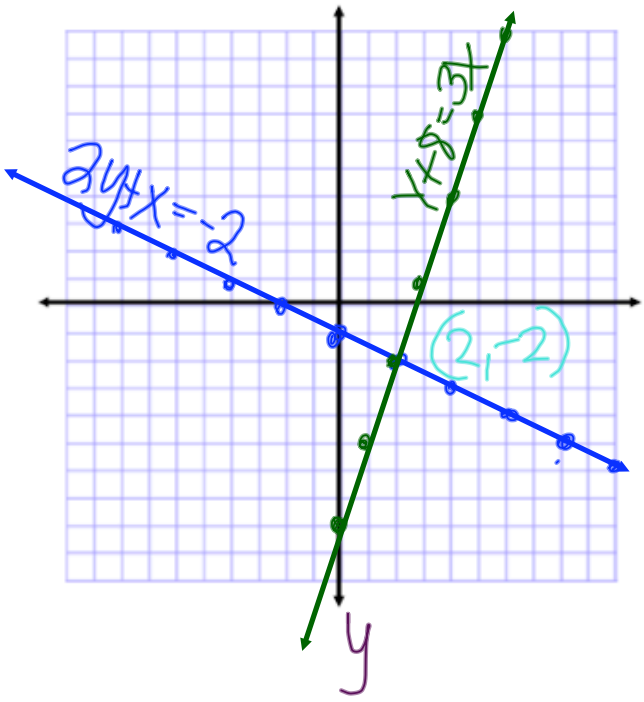
y-intercept

$2x + y = 2$

$2(0) + y = 2$

$y = 2$

5. Solve the system of equations graphically: $2y + x = -2$ and $y + 8 = 3x$



$y = -\frac{1}{2}x - 1$

$y = 3x - 8$

$\{(2,-2)\}$

CHECK:

$2y + x = -2$

$2(-2) + 2 = -2$

$-4 + 2 = -2$

$-2 = -2$ ✓

CHECK:

$y + 8 = 3x$

$-2 + 8 = 3(2)$

$6 = 6$ ✓

Use the axes to the right for questions 6 and 7

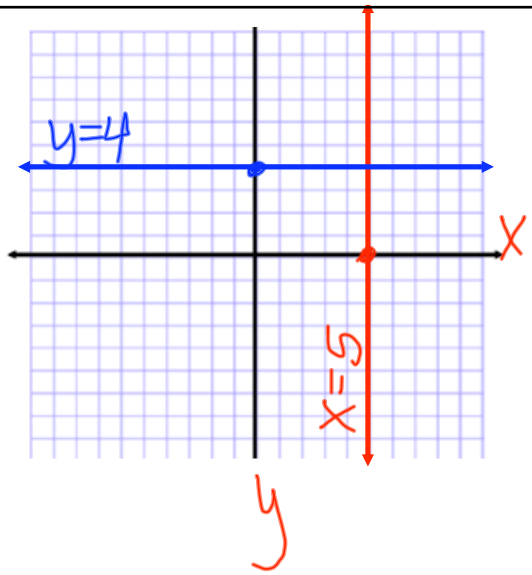
6a. Graph the line x = 5.

6b. What is the slope x =5 ? undefined

6c. How many solutions does this line have? infinite

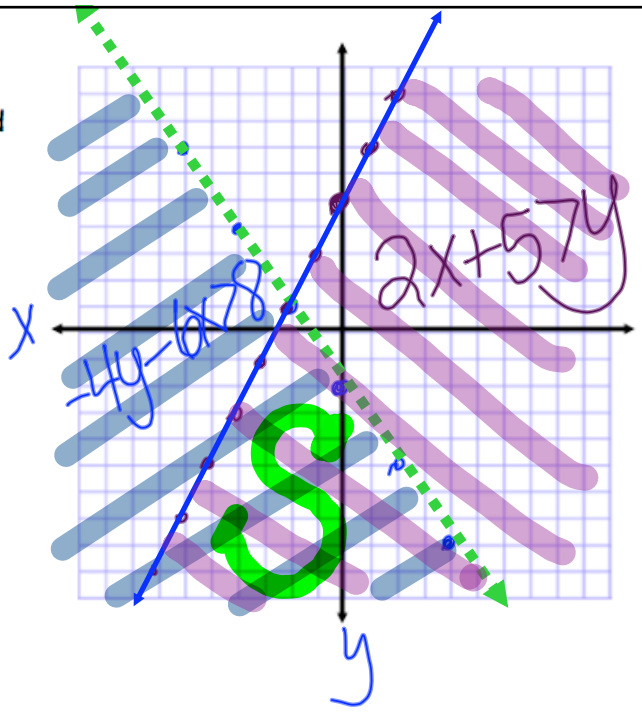
7a. Graph the line y = 4.

7b. What is the slope of y = 4? zero



8) Solve the system of inequalities: $2x + 5 > y$ and $-4y - 6x > 8$

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



9) Write the equation of the line that has a slope of zero and passes through the point (1, -4).

Horizontal line

$y = -4$

10) Write an equation of a line that passes through points (-3, 4) and (-2, 0).

$m = \frac{y_1 - y_2}{x_1 - x_2}$

$m = \frac{4-0}{-3-(-2)}$

$m = \frac{4}{-1}$

$m = -4$

$y = mx + b$

$4 = -4(-3) + b$

$4 = 12 + b$

$-12 \quad -12$

$-8 = b$

$y = -4x - 8$

11) Write the equation of a line that has slope -2 and passes through point (3 , 5).

$y = mx + b$

$5 = -2(3) + b$

$5 = -6 + b$

$+6 \quad +6$

$11 = b$

$y = -2x + 11$

12) Write an equation of a line that parallel to the line $3x + 3y = 8$, and passes through point (4, 2).

parallel → equal slopes

$y = -x + \frac{8}{3}$

$m = -1$

$y = mx + b$

$2 = -1(4) + b$

$2 = -4 + b$

$+4 \quad +4$

$6 = b$

$y = -x + 6$

13) Write the equation of a line that is perpendicular to the line 2y - 3 = x and passes through point (-1, 6).

negative reciprocal slopes

$y = \frac{x}{2} + \frac{3}{2}$

$m = \frac{1}{2}$

$m = -2$

$y = mx + b$

$6 = -2(-1) + b$

$6 = 2 + b$

$-2 \quad -2$

$4 = b$

$y = -2x + 4$

14) Write an equation that is identical to the line $-3x - 1 + y = 0$ but has different coefficients.

Multiply through by any constant!

Example

$4[-3x-1+y=0]$

$-12x-4+4y=0$

15) Is the line $\frac{1}{2}x - y = 8$ parallel to the line $2x - 2y = 4$? Why or why not?

$y = \frac{1}{2}x - 8$ $\quad$ $y = x - 2$

$m = \frac{1}{2}$ $\quad$ $m = 1$

Not parallel

16) Are the points (2,0), (4,3) and (6,6) collinear? Show all work that leads to your conclusion.

1 2 3

$m_{12} = \frac{0-3}{2-4}$ $m_{13} = \frac{0-6}{2-6}$ $m_{23} = \frac{3-6}{4-6}$

$m_{12} = \frac{-3}{-2}$ $m_{13} = \frac{-6}{-4}$ $m_{23} = \frac{-3}{-2}$

$m_{12} = \frac{3}{2}$ $m_{13} = \frac{3}{2}$ $m_{23} = \frac{3}{2}$

Yes they are collinear

17) Complete the table and write the equation of the line represented.

a)

x	y
0	0
1	-4
2	-8
3	-12
4	-16
5	-20

1 → -4

$y = -4x$

b)

x	y
0	-1
3	-2
6	-3
9	-4
12	-5

3 → -1

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

c)

x	y
0	2
1	4
2	6
3	8
4	10
5	12

1 → 2

$y = 2x + 2$

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