W-A2 Algebra 2 Week 14 12/13

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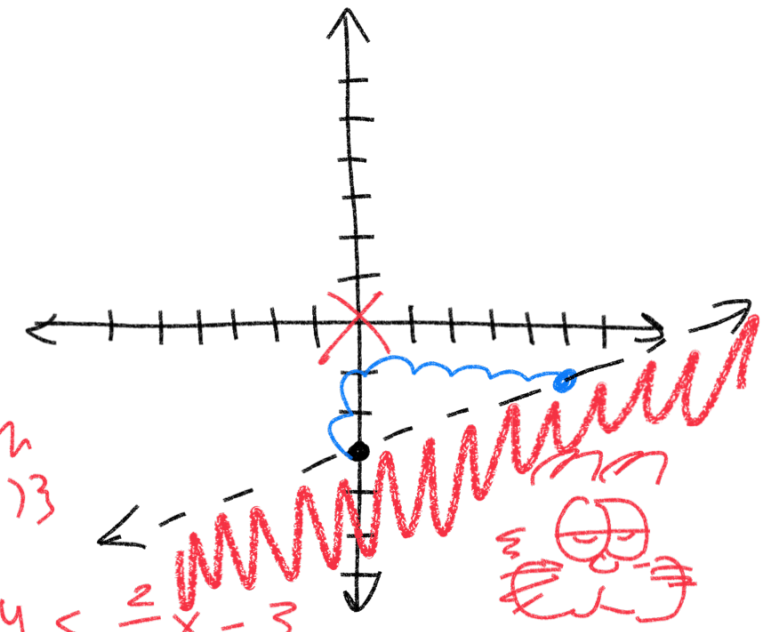
$y < \frac{2}{5}x - 3$

less-than ↑ ↑ y-int

$y = mx + b$

1.) Graph y-int

2.) Slope $\frac{2 \text{ up}}{5 \text{ right}}$



{(0,0)}

$y < \frac{2}{5}x - 3$

$0 < \frac{2}{5}(0) - 3$ $\quad 0 < -3$ false

$4x + 12y \geq 24$

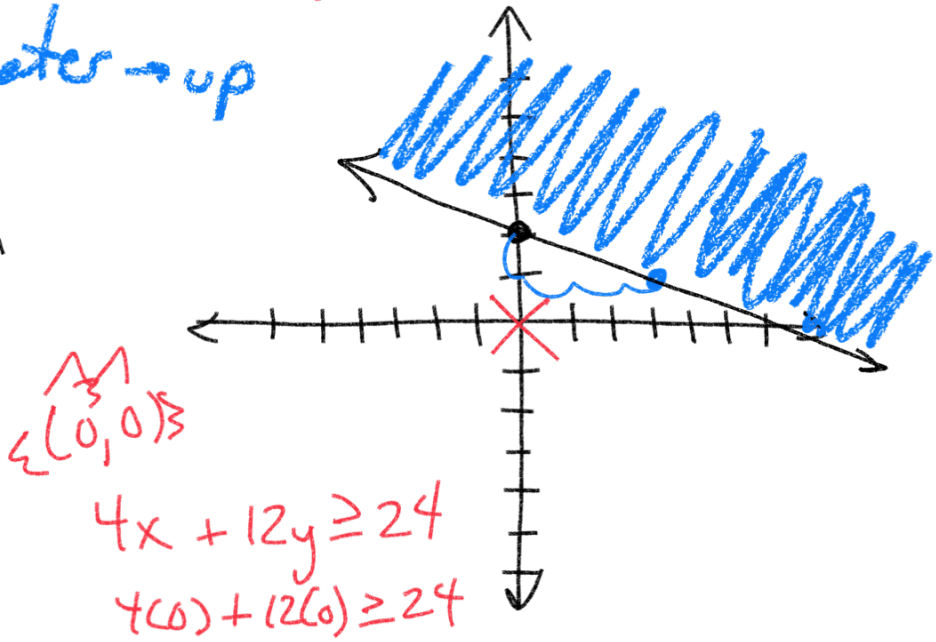
↑ Greater → up

$4x + 12y \geq 24$

$-4x \quad -4x$ fill

$\frac{12y}{12} \geq \frac{-4x + 24}{12}$

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



{(0,0)}

$4x + 12y \geq 24$

$4(0) + 12(0) \geq 24$

$0 \geq 24$

Algebra 2 Chapter 2 Pre-Test

1.) (8 pts total, 4 pts each) For the following function, determine *f*(3) and *f*(-2).

a) $f(x) = x^2 - 4x + 5$

$f(3) = (3)^2 - 4(3) + 5$

$9 - 12 + 5$

$-3 + 5$

$f(3) = \boxed{2}$

$f(-2) = (-2)^2 - 4(-2) + 5$

$4 + 8 + 5$

$12 + 5$

$f(-2) = \boxed{17}$

b) $f(x) = \frac{5x-6}{2x}$

$f(3) = \frac{5(3)-6}{2(3)}$

square root → $\sqrt{\ }$

2.) (8 pts total, 4 pts each) Suppose $f(x) = 3x - 5$ and $g(x) = x^2 + 6$

a) Find $\frac{g(3)}{f(2)}$.

$\frac{g(x)}{f(x)} = \frac{x^2+6}{3x-5}$ $\quad \frac{g(3)}{f(2)} = \frac{(3)^2+6}{3(2)-5} = \frac{9+6}{6-5} = \frac{15}{1}$

→ For what value(s) of x would $\frac{g(x)}{f(x)}$ not be a function, if any. $\boxed{15}$

Restrictions: 1.) Fractions - denominator cannot be zero

$\frac{g(x)}{f(x)}$

$f(x) \neq 0$ $\quad 3x - 5 \neq 0$

$+5 \quad +5$

$\frac{3x}{3} \neq \frac{5}{3}$

$\boxed{x \neq \frac{5}{3}}$

2.) Square root - Cannot be negative!

$h(x) = \sqrt{x-6}$ $\quad x - 6 \geq 0$

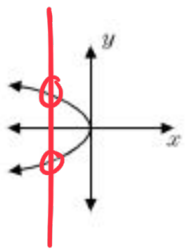
$+6 \quad +6$

$x \geq 6$

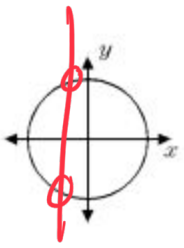
b) Find $f(-1) \cdot g(0)$

For what value(s) of x would $f(x) \cdot g(x)$ not be a function, if any.

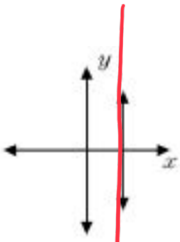
3.) (8 pts total, 2 pts each) Which of the following graphs represents a function? Write either "function" or "not a function".

a) 

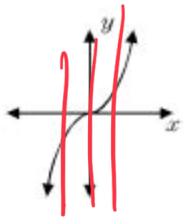
Naw!

b) 

Naw!

c) 

Naw!

d) 

Yaw!

4.) (8 pts total, 4 pts each) Write the equation for the line formed by each slope and point. Include both slope-intercept and ~~point-slope forms~~.

a) (-2, 4), m = -3

$y = mx + b$

$4 = (-3)(-2) + b$

$4 = 6 + b$

$-6 \quad -6$

$-2 = b$

$y = mx + b$

$y = -3x - 2$

b) (0, -5), m = ½

5.) (8 pts total, 4 pts each) Find the slope and intercepts for each of the following lines:

a) 4x + 6y = -12

$4x+6y=-12$

y-int: $x=0$

$\frac{6y}{6}=\frac{-12}{6}-\frac{4x}{6}$ $\quad -4x$

$y=-2$ $\quad \frac{6y}{6}=\frac{-4x}{6}-\frac{12}{6}$

x-int: $y=0$

$\frac{4x}{4}=\frac{-12}{4}$

$x=-3$

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

slope $=-\frac{2}{3}$

x-int $=-3$

y-int $=-2$

$\text{slope}=-\frac{A}{B}=\frac{-4}{6}$

$\text{x-int}=\frac{C}{A}=\frac{-12}{4}$

$\text{y-int}=\frac{C}{B}=\frac{-12}{6}$

b) 7x - 2y = 10

$Ax+By=C$

slope, y-int

x-int: $y=0$

$0=\frac{-2}{3}x-2$ $\quad +2$

$+2$

$-\frac{3}{2}(2)=\left(\frac{-2}{3}x\right)-\frac{3}{2}$

$x=-3$

6.) (8 pts total, 4 pts each) Find the slope for each of the following:

a) (-5, 3) and (7, -1)

$\text{slope}=\frac{y_2-y_1}{x_2-x_1}=\frac{-1-3}{7-(-5)}=\frac{-1-3}{7+5}=\frac{-4}{12}=\boxed{-\frac{1}{3}}$

b) (-2, 6) and (4, -9)

7.) (8 pts total, 4 pts each) Graph each of the following equations:

$X = \frac{C}{A}$

a) 5x - 10y = 20

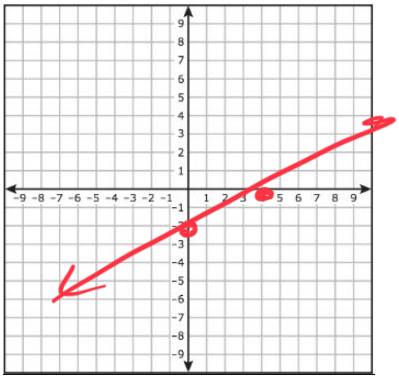
$y = \frac{C}{B}$

$5x - 10y = 20$

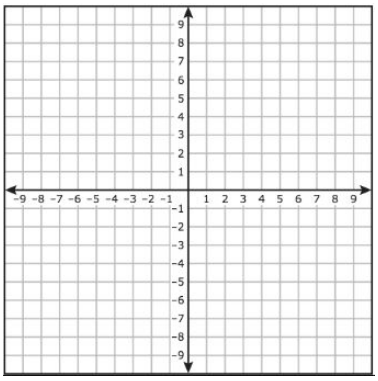
$x = 0 \quad y = -2 \quad (0, -2)$

$5x - 10y = 20$

$x = 4 \quad y = 0 \quad (4, 0)$



b) 16x + 8y = 48



8.) (8 pts total, 4 pts each) Determine the equation for each of the following:

a) Write the equation for a line through (-2, 7) and perpendicular to y = -2x + 5.

Given slope: -2

Needed slope: $\frac{1}{2}$

perpendicular → opposite → inverse

Given slope → $-2 \rightarrow 2 \rightarrow \frac{1}{2}$

b) Write the equation for a line parallel to y = 3x - 2 that passes through (1, -3)

$y = mx + b$

$7 = \left(\frac{1}{2}\right)(-2) + b$

$7 = -1 + b$

$+1 \quad +1$

$b = 8$

$y = mx + b$

$y = \frac{1}{2}x + 8$

9.) (8 pts total, 4 pts each) Each of the following depicts a direct variation function. For each, find the constant of variation and show the relationship in an equation.

a) If y = 12 when x = 3

Find y when x = 9

$y = kx$ $\quad k = \frac{y}{x}$

$k = \frac{y}{x} = \frac{12}{3} = 4$

$y = 4x$

$y = 4(9) = \boxed{36}$

b) If y = -6 when x = 15

Find x when y = 2

10.) (8 pts total, 4 pts each) For each of the following, determine whether y varies directly with x. If so, find the constant of variation and write the equation.

a)

x	y	$\frac{y}{x}$
-1	-4	$\frac{-4}{-1} = 4$ ✓
2	8	$\frac{8}{2} = 4$ ✓
3	12	$\frac{12}{3} = 4$ ✓

$\boxed{y = 4x}$

b)

x	y
-3	9
0	1
1	4

{(0, 0)}

11.) (6 pts total, 3 pts each) For each of the following, find the vertex of the absolute value function. Then graph the function.

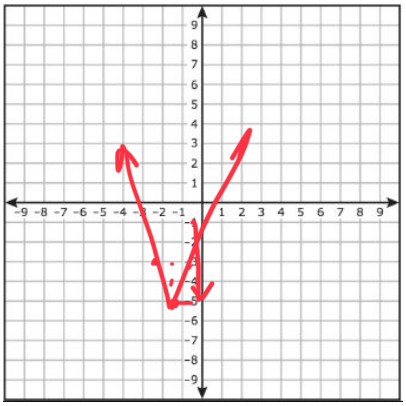
a) $f(x) = |2x + 3| - 5$

$|2(x + \frac{3}{2})| - 5$

up 2 over 1

Left $\frac{3}{2}$

down 5



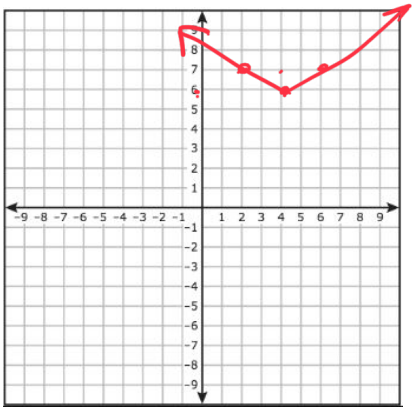
b) $f(x) = |1/2x - 2| + 6$

$|\frac{1}{2}(x - 4)| + 6$

$2 \div \frac{1}{2}$

$\frac{2}{1} * \frac{2}{1} = \frac{4}{1} = 4$

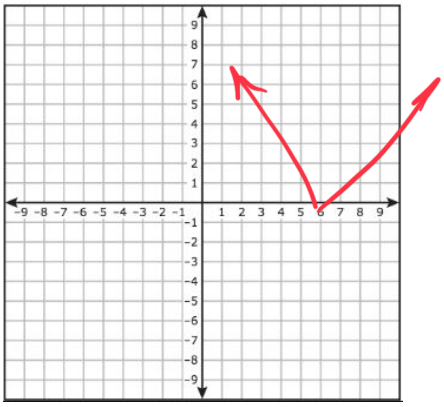
up 1 2 over



12.) (6 pts total, 3 pts each) For each of the following, find the vertex of the absolute value function. Then graph the function.

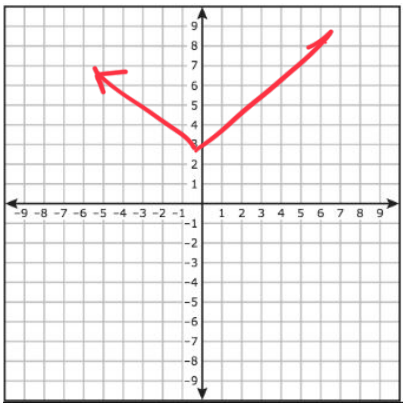
a) $f(x) = |x - 6|$

right 6



b) $f(x) = |x| + 3$

up 3

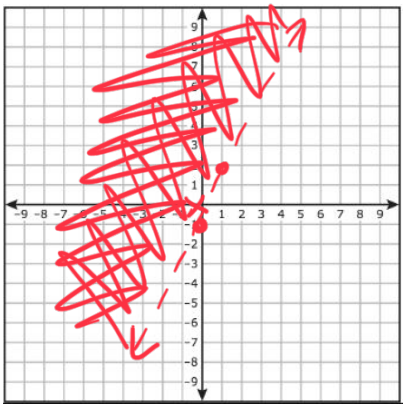


13.) (8 pts total, 4 pts each) For each of the following, graph the inequality.

a) $y > 3x - 1$

(0,0)s $0 > 3(0) - 1$

$0 > -1$ true!



b) $4x - 2y \leq 12$ Graph intercepts

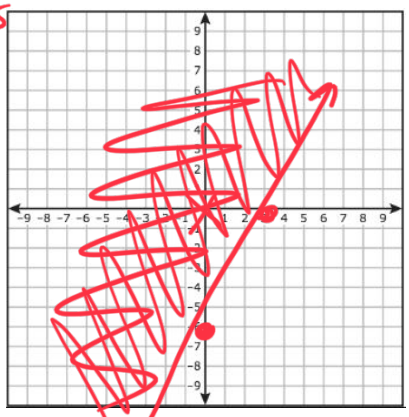
$-2y \leq 12$

$\frac{}{-2} \quad \frac{}{-2}$

$x=0 \quad y=-6 \quad (0,-6)$

$\frac{4x}{4} \leq \frac{12}{4}$ $y=0$ $(3,0)$ (0,0)s

$x=3$



$4(0) - 2(0) \leq 12$

$0 \leq 12$ true!

$4x - 2y \leq 12$

$-4x \quad -4x$

$\frac{-2y}{-2} \leq \frac{-4x+12}{-2} \quad \frac{}{-2}$

$y \geq 2x - 6$