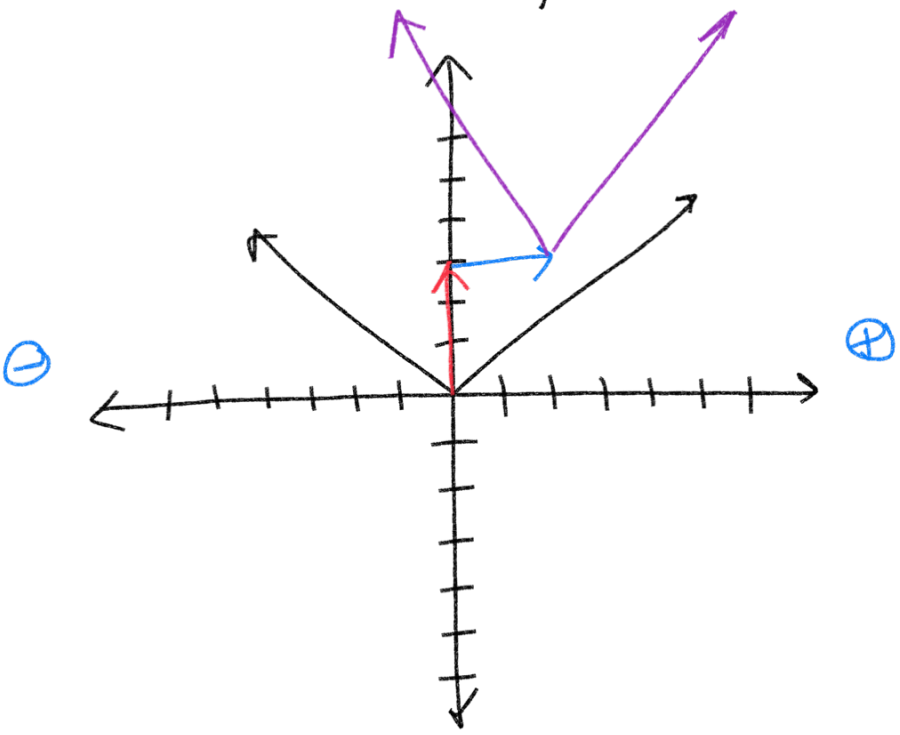
T-A2 Algebra 2 Week 13 12/5

$y = |x - 2| + 3$

$y = |x|$

up 3

2 right (opposite)



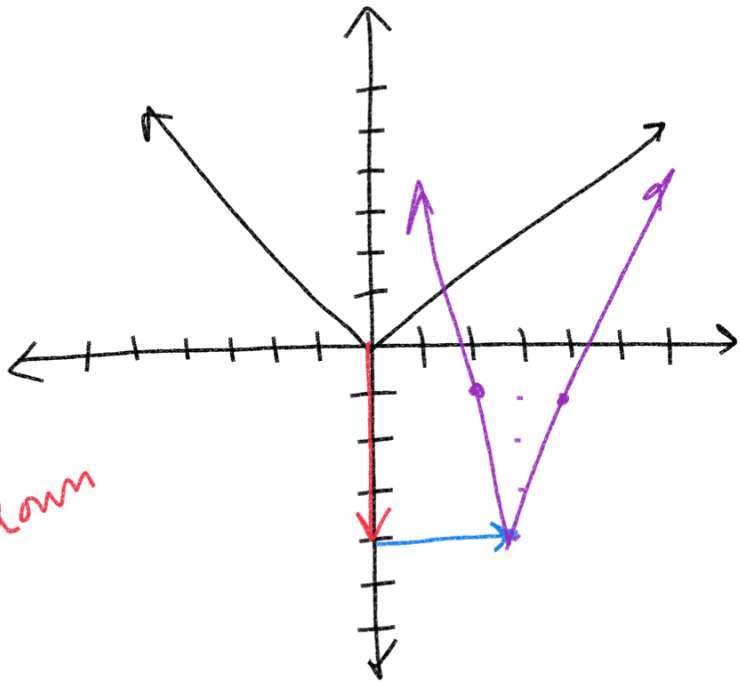
$y = \left|\frac{3x}{3} - \frac{6}{3}\right| - 4$

$y = |3(x - 2)| - 4$

slope $\frac{\text{up } 3}{\text{over } 1}$

right 2

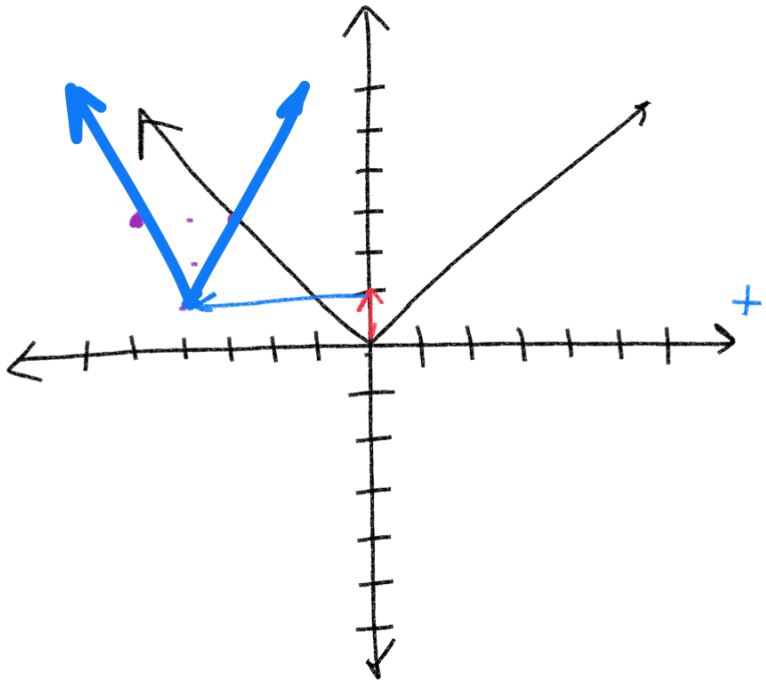
4 down



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

$$y = |2(x+4)| + 1$$

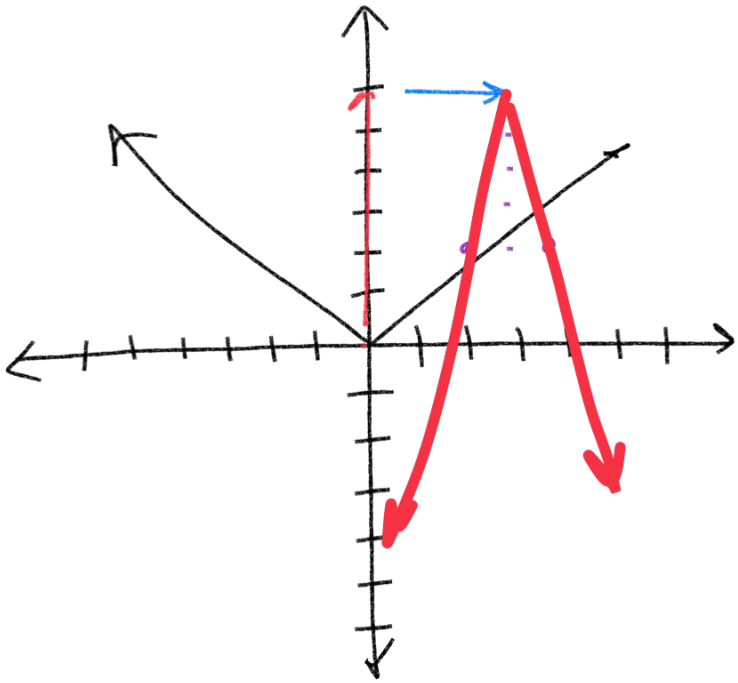
slope $\frac{\text{up } 2}{1 \text{ over}}$ — Left 4 — up 1



$$y = -\left|\frac{4x}{4} - \frac{12}{4}\right| + 6$$

$$y = -|4(x-3)| + 6$$

flip — slope $\frac{\text{down } 4}{\text{over } 1}$ — 3 right — up 6



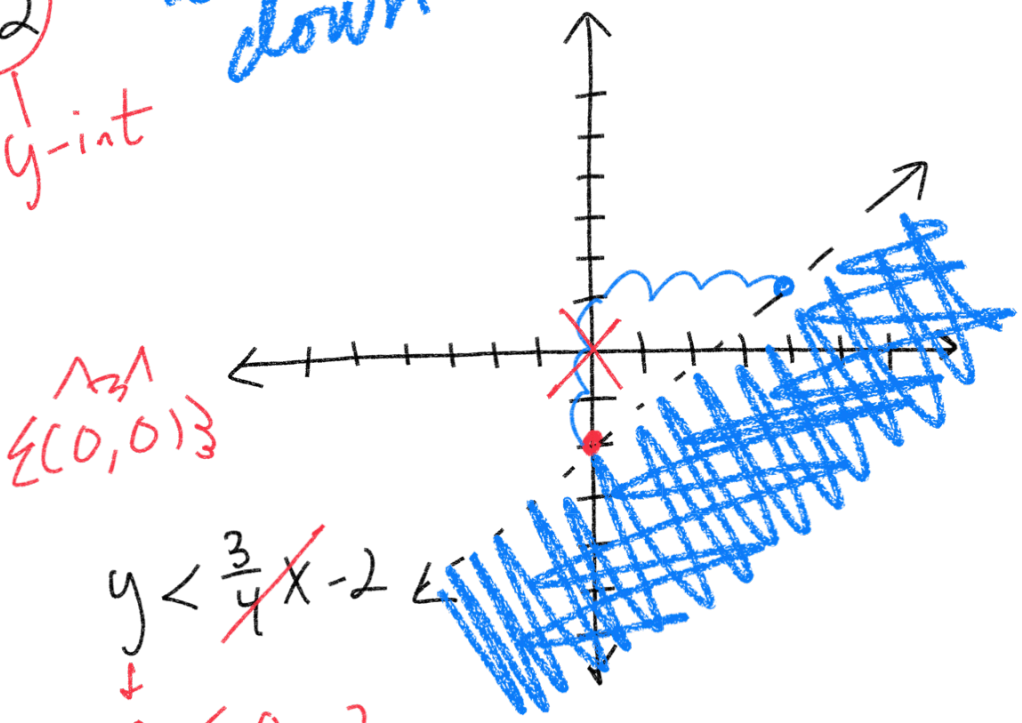
$y < \frac{3}{4}x - 2$ less down

slope: up 3 / right 4

y-int

$\geq \leq$

$><$



$\{(0,0)\}$

$y < \frac{3}{4}x - 2$

$0 < 0 - 2$

$0 < -2$ false

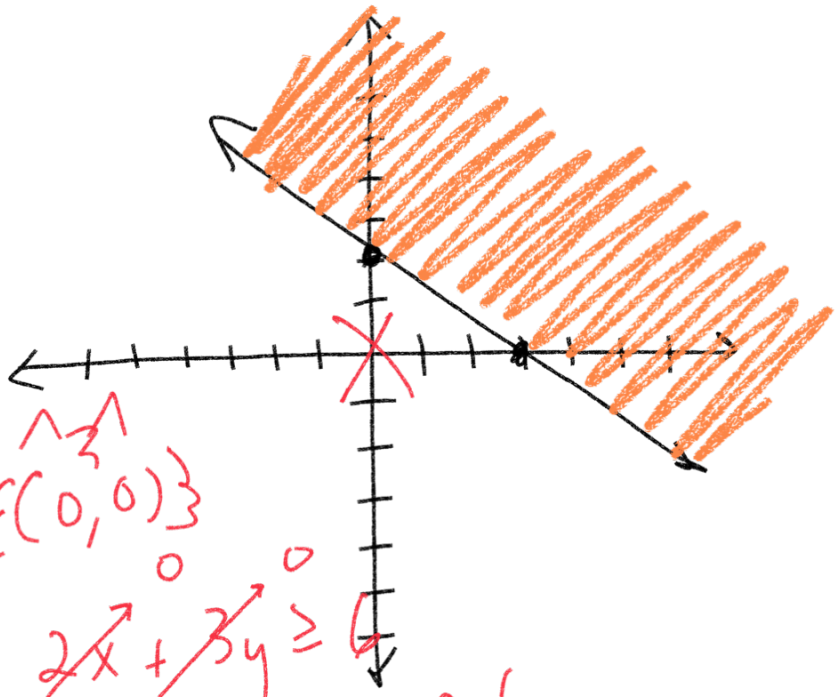
$2x + 3y \geq 6$

$2x + 3y \geq 6$

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

$2x + 3y \geq 6$

$x = 3 \quad y = 0 \quad (3,0)$



$\{(0,0)\}$

$2x + 3y \geq 6$

$0 \geq 6$ false

Algebra 2 Chapter 2 Pre-Test

Both

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

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

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

$9 - 12 + 5$

$-3 + 5 = 2$

$f(3) = 2$

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

$4 + 8 + 5$

$12 + 5 = 17$

$f(-2) = 17$

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

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

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

$f(2)$ 2

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

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

Restrictions: Fraction → denominator $\neq 0$

Square Root → must be ≥ 0

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

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

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

$f(x) \neq 0$

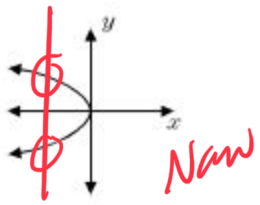
$3x - 5 \neq 0$

$+5 \quad +5$

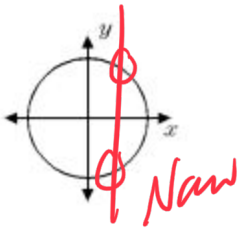
$\frac{3x}{3} \neq \frac{5}{3}$

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

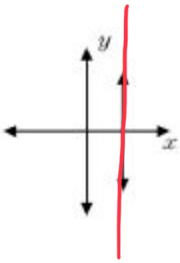
3.) (8 pts total, 2 pts each) Which of the following graphs represents a function? Write either "function" or "not a function".

a) 

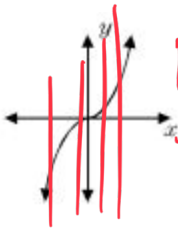
Naw

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

$y = mx + b$

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

$4 = 6 + b$

$-6 \quad -6$

$b = -2$

$y = mx + b$

$y = -3x - 2$

b) (0, -5), m = ½

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

a) $4x + 6y = -12$

$y=0$ $\quad 4x+6y=-12$

$4x+6(0)=-12 \quad -4x \quad -4x$

$\frac{4x}{4}=\frac{-12}{4} \quad x=-3 \quad \frac{6y}{6}=\frac{-4x-12}{6}$

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

slope $= -\frac{2}{3}$ $\quad -\frac{A}{B}$

y-int $= -2$ $\quad \frac{C}{B}$

x-int $= -3$ $\quad \frac{C}{A}$

b) $7x - 2y = 10$

$Ax+By=C$

$4x+6y=-12$

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

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

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

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

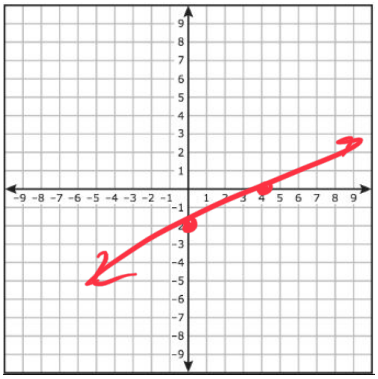
7.) (8 pts total, 4 pts each) Graph each of the following equations:

a) 5x - 10y = 20

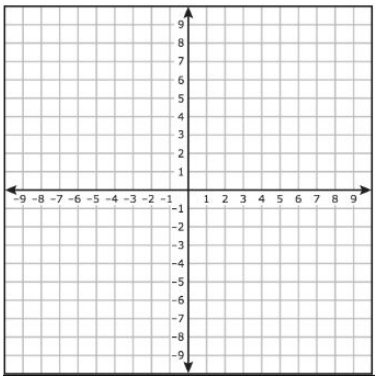
$-10y = 20$ $\quad 5x = 20$

$x = 0 \quad y = -2 \quad x = 4 \quad y = 0$

$(0, -2) \quad (4, 0)$



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 $= -2$

perp slope $\rightarrow -2 \rightarrow$ opp $2 \rightarrow$ inverse $\frac{1}{2}$

$m = \frac{1}{2} \quad (x, y) = (-2, 7)$

$y = mx + b$

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

$7 = -1 + b$

$+1 \quad +1$

$8 = b$

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

$y = mx + b$

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

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

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

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

$y = 4x$

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

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

$\boxed{y = 4x}$

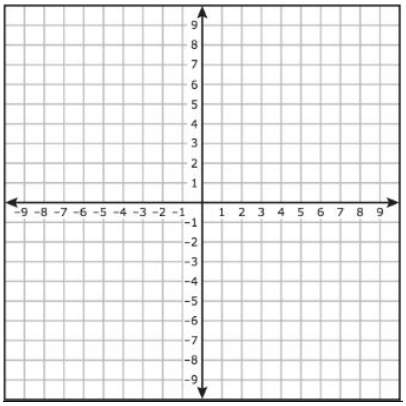
b)

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.

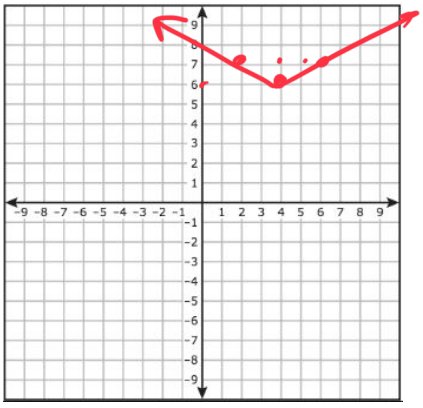
a) $f(x) = |2x + 3| - 5$



KCF

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

b) $f(x) = |\frac{1}{2}x - 2| + 6$



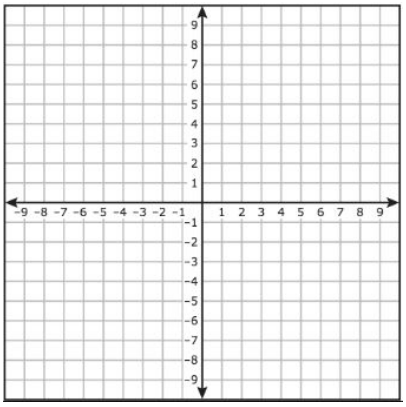
$y = |\frac{1}{2}(x-4)| + 6$

1 up
2 over

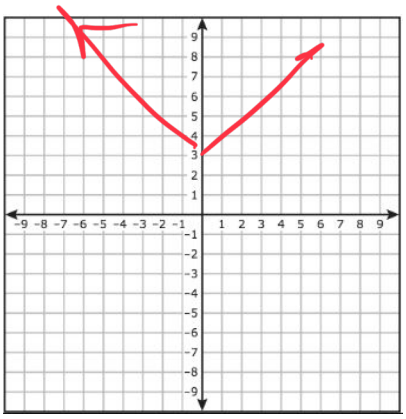
12.) (6 pts total, 3 pts each) For each of the following, find the vertex of the absolute value function. Then graph the function.

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) $y > 3x - 1$

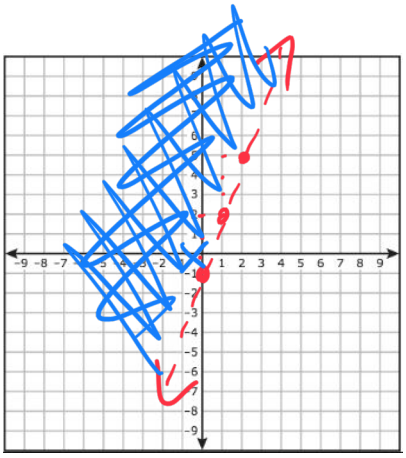
slope up 3 over 1

(0,0)

$y > 3x - 1$

$0 > 3(0) - 1$

$0 > -1$



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