

Algebra 2 Chapter 2 Pre-Test

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

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

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

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

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

$\uparrow$   
0

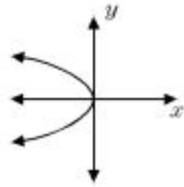
$$3x-5 \neq 0$$
$$+5 \quad +5$$
$$\frac{3x \neq 5}{3 \quad 3}$$
$$x \neq \frac{5}{3}$$

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.

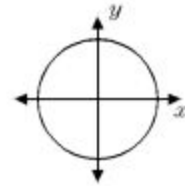
3.) (8 pts total, 2 pts each) Which of the following graphs represents a function? Write either "function" or "not a function".

a)

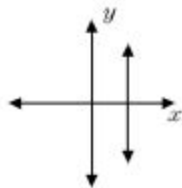


vertical  
line  
test

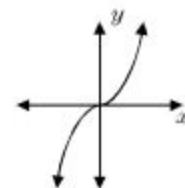
b)



c)



d)



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

point-slope  
 $y - y_1 = m(x - x_1)$

slope-intercept  
 $y = mx + b$

b)  $(0, -5)$ ,  $m = \frac{1}{2}$

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

$A$   $B$   $C$   
a)  $4x + 6y = -12$

slope =  $-\frac{A}{B}$

$A=4$   
 $B=6$

$-\frac{4}{6} = \left(-\frac{2}{3}\right)$

slope-int  
 $y = mx + b$

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

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

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

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

b)  $7x - 2y = 10$

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

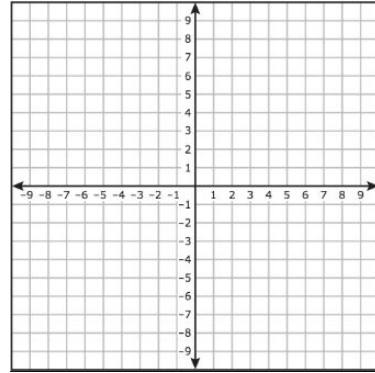
a) ~~(-5, 3)~~ and (7, -1)

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

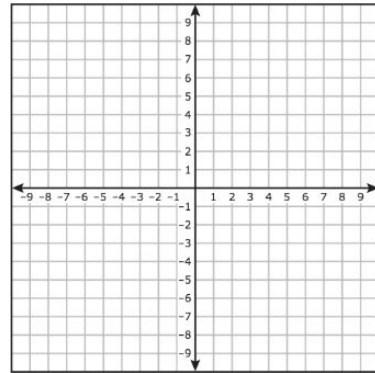
b) (-2, 6) and (4, -9)

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

a)  $5x - 10y = 20$



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  $y = -2x + 5$ .

*slope of  
perpendicular  
line is  
opposite  
inverse*

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

*parallel  
lines have  
equal slopes*

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  $x = 9$

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

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
-1	-4
2	8
3	12

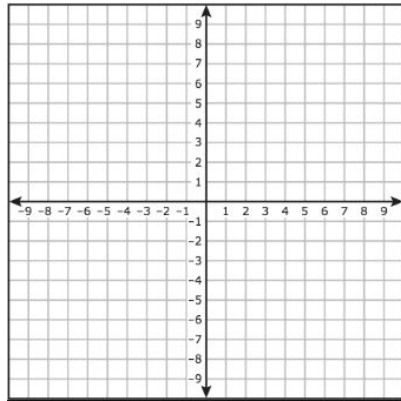
$$y/x = k$$

b)

x	y
-3	9
0	1
1	4

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



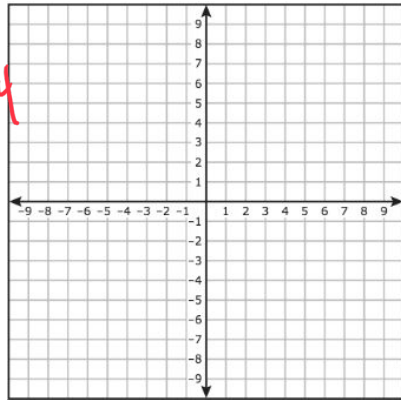
b)  $f(x) = |1/2x - 2| + 6$

*Handwritten work:*

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

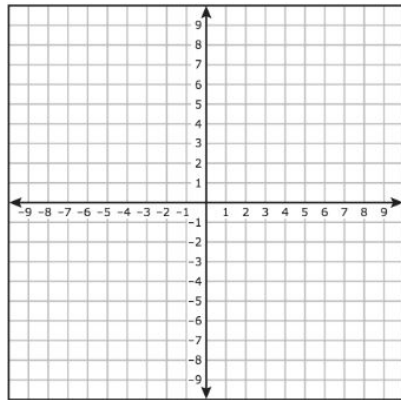
*Handwritten notes:*

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

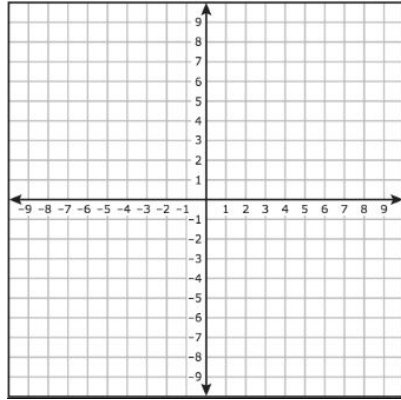


12.) (6 pts total, 3 pts each) For each of the following, find the vertex of the absolute value function. Then graph the function.

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

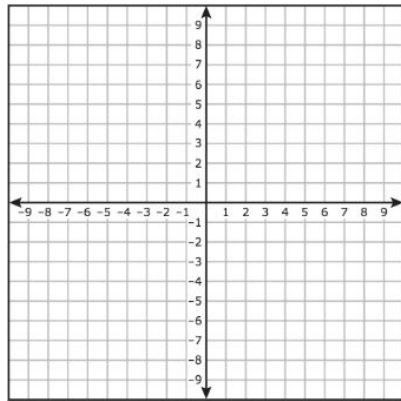


b)  $f(x) = |x| + 3$



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

a)  $y > 3x - 1$



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

