

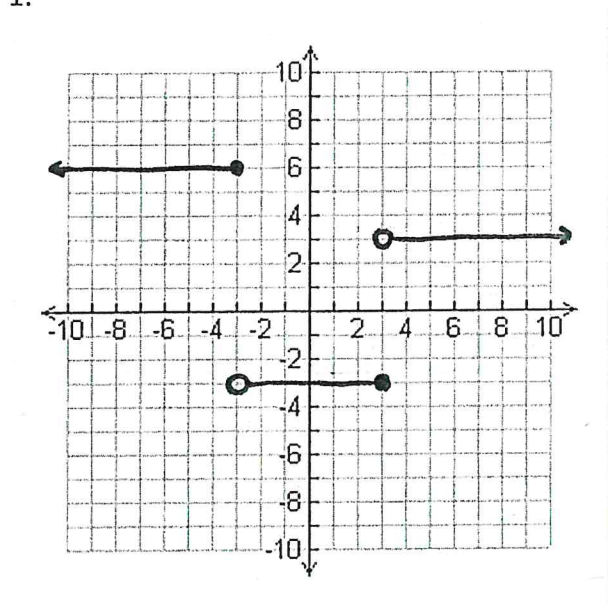
Unit 3: Introduction to Functions  
PRE-TEST

For each of the following functions:

A. Explain why it is, or why it is not a function based on the information provided.

B. If it is a function, then provide the Domain and Range for that function.

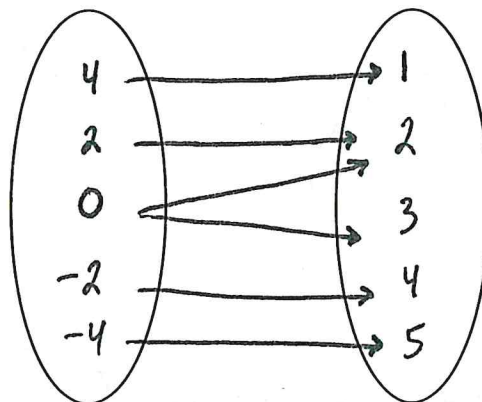
1.



(A) Function. Passes the Vertical Line Test

(B) Domain  $(-\infty, \infty)$  Range  $\{-3, 3, 6\}$

2.



(A) Not a Function

The value zero has 2 different output values.

3.  $(5, 2), (-5, 8), (3, 1), (7, 8), (-3, 3), (-7, 12)$

(A) Function  
All input values are different.

(B) Domain  $\{-7, -5, -3, 3, 5, 7\}$   
Range  $\{1, 2, 3, 8, 12\}$

+ 9 pts  
(3 each)

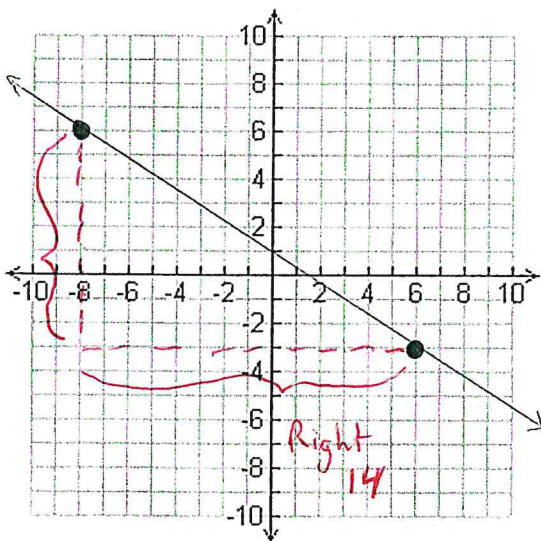
Given the following functions find the indicated function notation:

$f(x) = -5x + 2$	$g(x) = 2x^2 + 3x - 6$
4. $f(4)$ $f(4) = -5(4) + 2$ $f(4) = -20 + 2$ $f(4) = -18$	6. $g(-3)$ $g(-3) = 2(-3)^2 + 3(-3) - 6$ $g(-3) = 2(9) - 9 - 6$ $g(-3) = 18 - 9 - 6$ $g(-3) = 9 - 6$ $g(-3) = 3$
5. $f(-5)$ $f(-5) = -5(-5) + 2$ $f(-5) = 25 + 2$ $f(-5) = 27$	7. $g(7)$ $g(7) = 2(7)^2 + 3(7) - 6$ $g(7) = 2(49) + 21 - 6$ $g(7) = 98 + 21 - 6$ $g(7) = 119 - 6$ $g(7) = 113$

2 pts each.

Find the slope of the line:

8.



2 pts

down 9

Right 14

$$m = \frac{-9}{14}$$

If you can simplify the fraction you MUST do so!

Find the slope of the line through each pair of points:

9. $(-17, 12)$ & $(-8, -15)$ $x_1 \quad y_1 \quad x_2 \quad y_2$ $m = \frac{-15 - (12)}{-8 - (-17)} = \frac{-15 - 12}{-8 + 17} = \frac{-27}{9}$ $m = -3$	10. $(14, -20)$ & $(18, -13)$ $x_1 \quad y_1 \quad x_2 \quad y_2$ $m = \frac{-13 - (-20)}{18 - (14)} = \frac{-13 + 20}{18 - 14} = \frac{7}{4}$ $m = \frac{7}{4}$
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2 pts each

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

+14 pts

Write the Linear Equation given the following information:

11. Through  $(-1, 0)$  with slope = 5

Equation form: Point-Slope

Equation:  $y - y_1 = m(x - x_1)$   
 $y - 0 = 5(x - (-1))$   
 $y - 0 = 5(x + 1)$

12. Slope = -4 and y-intercept = -2

Equation form: Slope-Intercept

Equation:  $y = mx + b$   
 $y = -4x + (-2)$   
 $y = -4x - 2$

2 pts each

Write the Slope-Intercept form of the Linear Equation through the given points:

13.  $(0, 2)$  &  $(-4, -3)$

$x_1, y_1$      $x_2, y_2$   
 $m = \frac{-3 - (2)}{-4 - (0)} = \frac{-3 - 2}{-4 - 0} = \frac{-5}{-4} = \frac{5}{4}$

Equation  $y = mx + b$

Using  $(0, 2)$

$2 = \frac{5}{4}(0) + b$

$2 = 0 + b$

$2 = b$

Using  $(-4, -3)$

$-3 = \frac{5}{4}(-4) + b$

$-3 = -5 + b$

$+5 \quad +5$

$2 = b$

$y = \frac{5}{4}x + 2$

14.  $(-5, 5)$  &  $(3, -4)$

$x_1, y_1$      $x_2, y_2$   
 $m = \frac{-4 - (5)}{3 - (-5)} = \frac{-4 - 5}{3 + 5} = \frac{-9}{8}$

Equation  $y = mx + b$

Using  $(-5, 5)$

$5 = \frac{-9}{8}(-5) + b$

$5 = \frac{45}{8} + b$

$\frac{-45}{8} \quad \frac{-45}{8}$

$\frac{-5}{8} = b$

Using  $(3, -4)$

$-4 = \frac{-9}{8}(3) + b$

$-4 = \frac{-27}{8} + b$

$\frac{+27}{8} \quad \frac{+27}{8}$

$\frac{-5}{8} = b$

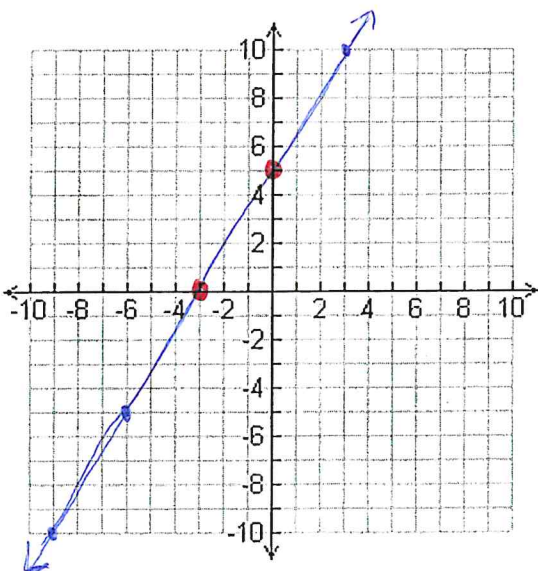
$y = \frac{-9}{8}x - \frac{5}{8}$

2 pts each

You only need to use 1 point

Sketch the graph of the line:

15. x-intercept = -3 and y-intercept = 5



Red dots show the given intercepts.

Counting the slope is  $\frac{5}{3}$  so blue dots use that to plot 3 extra points to help graph nicely.

2 pts.

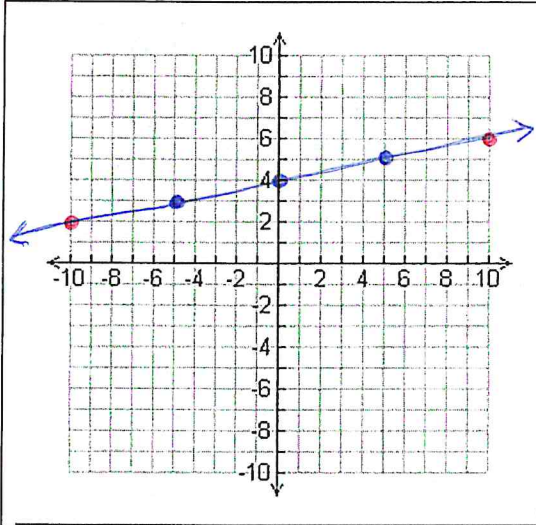
+10

For each of the following:

A. Create a T-Chart containing values when  $x = -5, 0,$  and  $5$

B. Sketch the graph of the line plotting each point found in part A.

8 pts  
2 graph  
6 T-chart



$$16. x - 5y = -20$$

X-int the  $y=0$

y-int the  $x=0$

$$x - 5(0) = -20$$

$$x = -20$$

$$(0) - 5y = -20$$

$$\frac{-5y}{-5} = \frac{-20}{-5}$$

$$y = 4$$

X	$x - 5y = -20$	y
-5	$-5 - 5y = -20$ $-5y = -15$	3
0	$0 - 5y = -20$ $-5y = -20$	4
5	$5 - 5y = -20$ $-5y = -25$	5

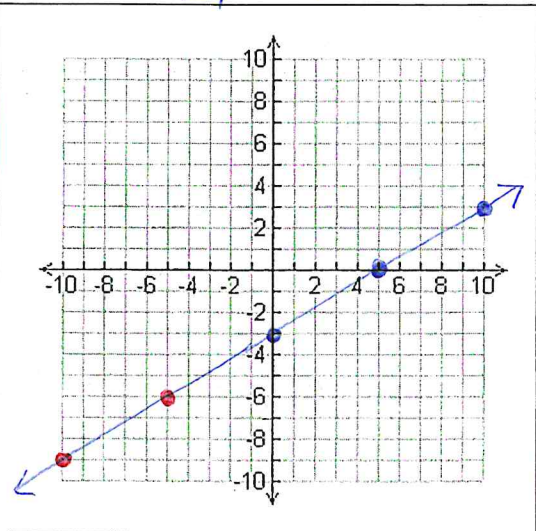
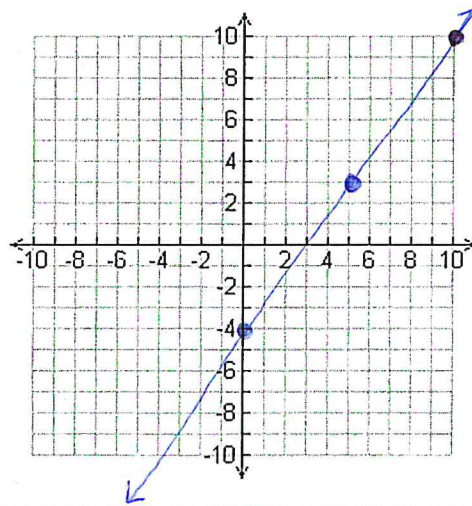
$$17. y = \frac{7}{5}x - 4$$

slope  $\frac{7}{5}$  up 7 right 5

y-intercept = -4

Can also reverse the slope and go down 7 left 5

X	$y = \frac{7}{5}x - 4$	y
-5	$\frac{7}{5}(-5) - 4$ $-7 - 4$	-11
0	$\frac{7}{5}(0) - 4$ $0 - 4$	-4
5	$\frac{7}{5}(5) - 4$ $7 - 4$	3



$$18. y = \frac{3}{5}x - 3$$

slope  $\frac{3}{5}$  up 3 right 5

y-intercept = -3

Can also reverse the slope and go down 3 left 5

X	$y = \frac{3}{5}x - 3$	(x, y)
-5	$\frac{3}{5}(-5) - 3$ $-3 - 3$	(-5, -6)
0	$\frac{3}{5}(0) - 3$ $0 - 3$	(0, -3)
5	$\frac{3}{5}(5) - 3$ $3 - 3$	(5, 0)