Name: key Date: Hour:

Algebra 1
WS Unit 2 Test Review

1. Find the domain and range of each relation.

a. {(1, 5), (-1, 3), (2, 7), (8, 10), (-2, 3)}

D: $\{1, -1, 2, 8, -2\}$

R: $\{5, 3, 7, 10\}$

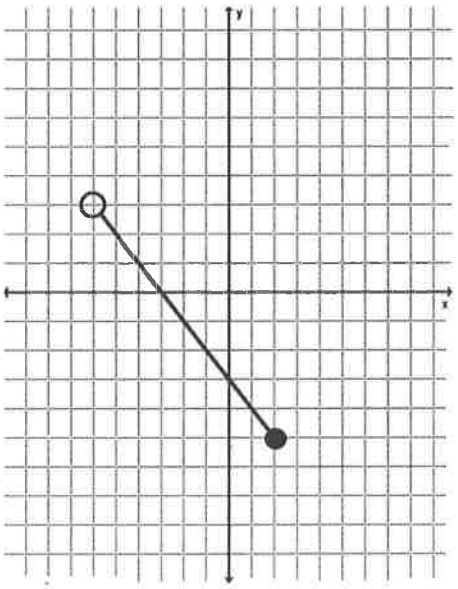
c.

x	-3	-1	0	1	3
y	2	6	10	14	18

D: $\{-3, -1, 0, 1, 3\}$

R: $\{2, 6, 10, 14, 18\}$

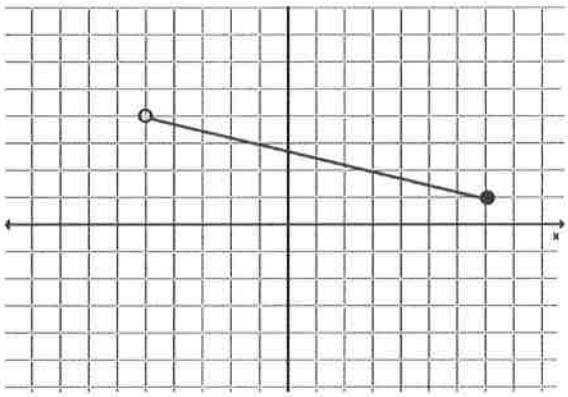
b.



D: $\{-6 < x \leq 2\}$

R: $\{-5 \leq y < 3\}$

d.



D: $\{-5 < x \leq 7\}$

R: $\{1 \leq y < 4\}$

2. Using the examples in #1, determine if each represents a linear function. Explain your reasoning.

a. no, not constant

b. no, not constant

c. yes, line

d. yes, line

a)

x	y
-2	3
-1	3
1	5
2	7
8	10

b)

x	y	
-3	2	
-1	6	+4
0	10	+4
1	14	+4
3	18	+4
		+2 +1 +1 +2

3. If $f(x) = 3x - 5$ and $g(x) = 3 - 5x$, evaluate each of the following.

a. $g(-3)$

$g(-3) = 3 - 5(-3)$

$= 3 + 15$

$g(-3) = 18$

$(-3, 18)$

b. $f(4)$

$f(4) = 3(4) - 5$

$= 12 - 5$

$f(4) = 7$

$(4, 7)$

c. $g(2) - f(-1)$

$g(2)$: $3 - 5(2)$, $3 - 10$, -7

$f(-1)$: $3(-1) - 5$, $-3 - 5$, -8

$-7 + 8 = 1$

4. Alan pays Comcast $5 per movie rental plus an $80 fee.

a. Write a function, in function notation, to represent Alan's total bill.

$f(x) = 5x + 80$

b. How much is Alan's bill if he rents 6 movies?

$f(6) = 5(6) + 80$

$f(6) = \$110$

c. If Alan's bill was $130, how many movies did he rent?

$130 = 5x + 80$

$-80 \quad -80$

$\frac{50}{5} = \frac{5x}{5}$

$x = 10$ movies

$f(10) = 130$

4. Find the x- and y-intercepts of the following equations (write as on ordered pair).

a. $-x + 2y = 12$

$\frac{-x}{-1} = \frac{12}{-1}$ $\quad \frac{2y}{2} = \frac{12}{2}$

$x = -12$ $\quad y = 6$

$(-12, 0)$ $\quad (0, 6)$

b. $6y + 3x = -18$

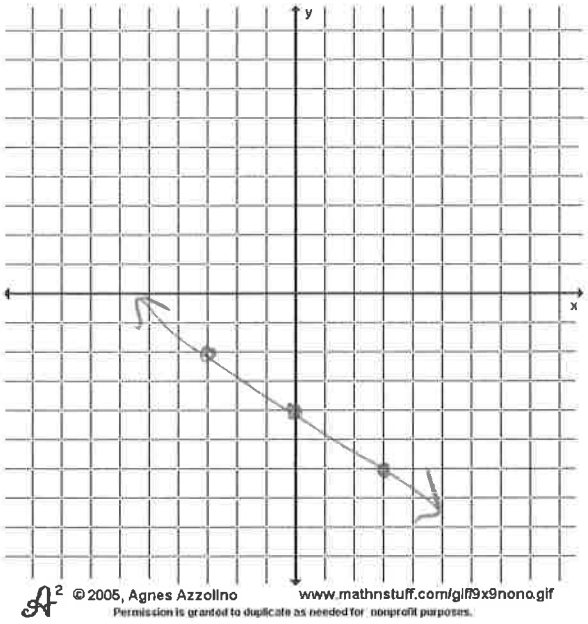
$\frac{6y}{6} = \frac{-18}{6}$ $\quad \frac{3x}{3} = \frac{-18}{3}$

$y = -3$ $\quad x = -6$

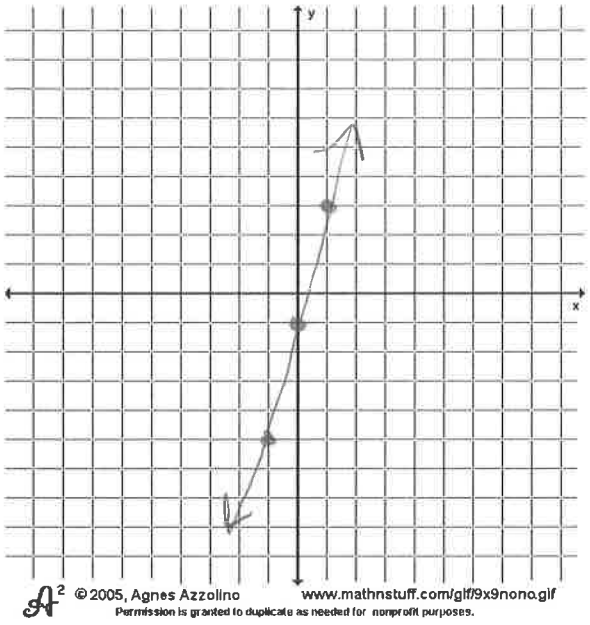
$(0, -3)$ $\quad (-6, 0)$

5. Graph each function.

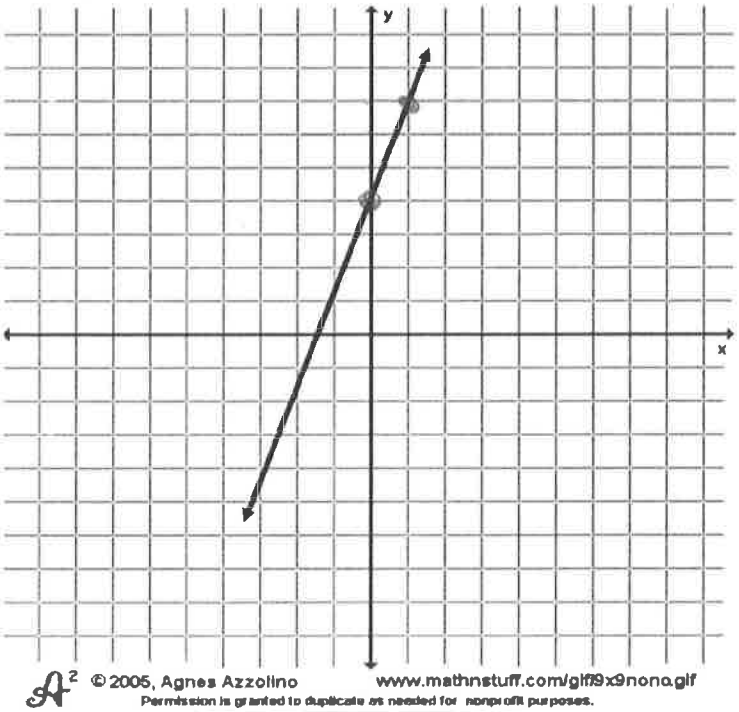
a. $f(x) = -\frac{2}{3}x - 4$



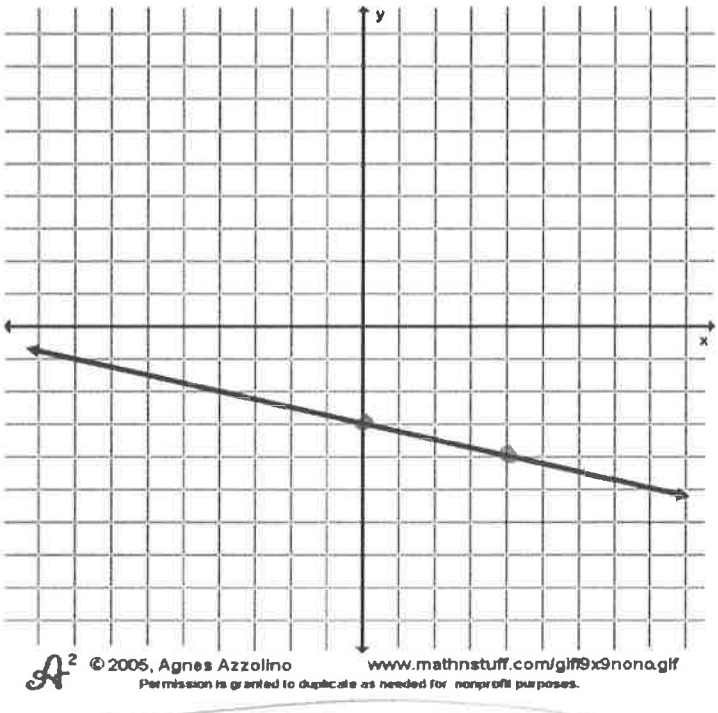
b. $f(x) = 4x - 1$



6. Write the equation of the line, in slope intercept form, for each graph.



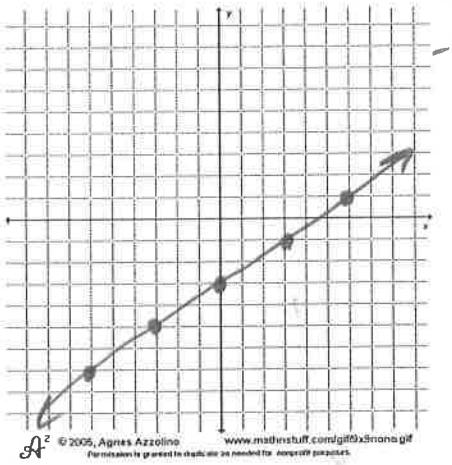
$f(x) = 3x + 4$



$g(x) = -\frac{1}{4}x - 3$

7. Graph each equation.

$2x - 3y = 9$



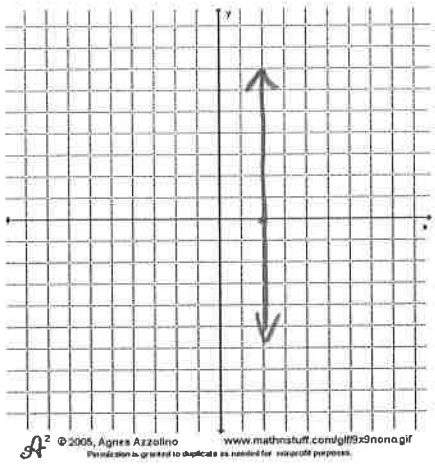
$2x - 3y = 9$

$-2x \quad -2x$

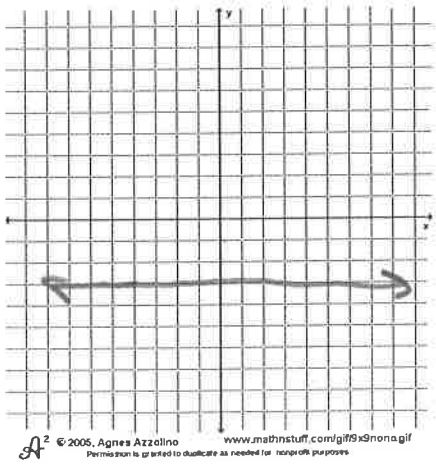
$\frac{-3y}{-3} = \frac{-2x}{-3} + \frac{9}{-3}$

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

$x = 2$



$y = -3$



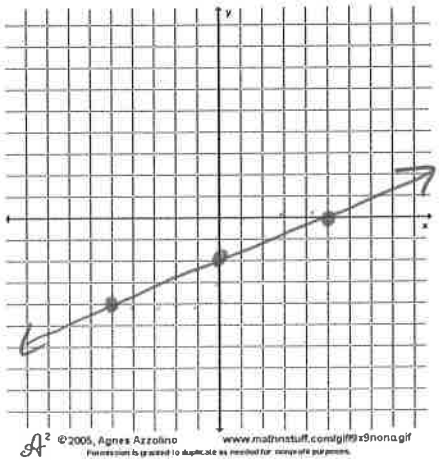
$-5y + 2x = 10$

$-5y + 2x = 10$

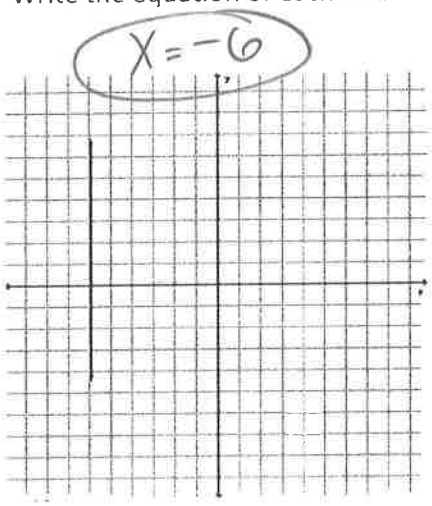
$-2x \quad -2x$

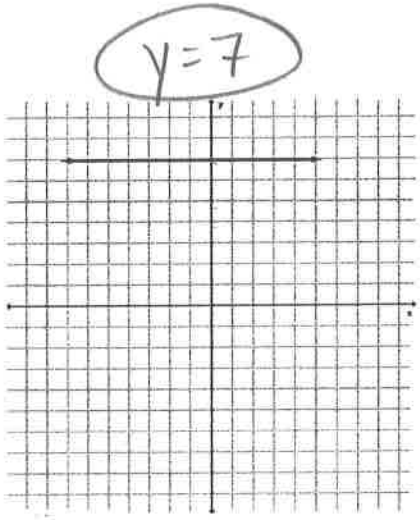
$\frac{-5y}{-5} = \frac{-2x}{-5} + \frac{10}{-5}$

$y = \frac{2}{5}x - 2$



8. Write the equation of each line.





9. Describe the transformation for each linear function when compared to the parent function $f(x) = x$.

a. $k(x) = 3x - 1$
- vertically stretched by a factor of 3
- translated down 1 unit

b. $g(x) = -\frac{5}{6}x + 4$
- vertically compressed by factor of 5/6
- translated up 4 units
- reflected in the y-axis

c. $h(x) = -2x + 3$
- vertically stretched by factor of 2
- translated up 3 units
- reflected in the y-axis

d. $y = \frac{10}{7}x + 20$
- vertically stretched by factor of 10/7
- translated up 20 units

10. Write a linear function for each transformation described below.

a. Reflected in the y-axis, stretched by a factor of 3, and translated 7 units up

$f(x) = -3x + 7$

b. Translated 9 units down, compressed by your choice

$f(x) = \frac{1}{2}x - 9$

c. Stretched by a factor of $\frac{5}{4}$, translated 6 units down, reflected in the y-axis

$f(x) = -\frac{5}{4}x - 6$

d. Compressed by a factor of $\frac{8}{11}$, translated 5 units up

$f(x) = \frac{8}{11}x + 5$

e. Reflected in the y-axis, translated 3 units down

$f(x) = -x - 3$