Name: Date: Hour:

Algebra 1 – Unit 1
Final Review

Simplify each radical expression.

1. $-2\sqrt{24}$ $3\sqrt{18}$ $\sqrt{60}$

2. Order the numbers below from least to greatest and classify each.

$$-\sqrt{12}, -3, -5.\overline{66}, 0, 2, -\frac{2}{3}$$

Number	Real	Rational	Irrational	Integer	Whole	Natural

3. If $4(x-2)+6x=12+5x$, what is the value of $2x-3$?

4. Write and solve an equation to represent the following:
   The quotient of 6 and the quantity of 2 times a number added to 4 is equal to 8

Solve each equation.

5. $3(2x-5)=2(3x-2)$

6. On the first day of the year, Alicia has $1000 in her savings account and started spending $25 a week. Her sister Kelsey had $650 in her savings account and started saving $15 a week. After how many weeks will the sisters have the same amount? What will that amount be?

7. A cyclist travels 56 miles in 4 hours. What is the cyclist speed in feet per minutes?

8. The ratio of junior varsity members to varsity members on the track team is 3:5. There are 25 varsity members on the team. Write and solve a proportion to find the number of junior varsity members.

9. Solve the equation. Write a justification for each step.

Statements	Reasons
$-(x+4)=2x+6$	

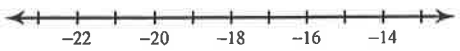
10. A totem pole casts a shadow 45 feet long at the same time that a 6 foot tall man casts a shadow that is 3 feet long. Write and solve a proportion to find the height of the totem pole.

Algebra 1 Name_____

Final Review - Unit 2

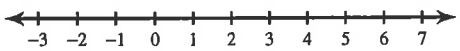
Solve each inequality and graph its solution.

1) $44 > -2(-7 + v)$

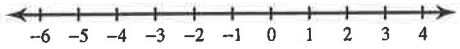


2) $-2 \le \dfrac{-9 + x}{11}$

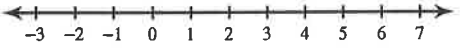
3) $7(6k + 3) \le -14 + 7k$



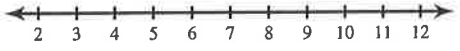
4) $-26 + 8k \le -6(7k - 4)$



5) $8(1 + v) - 5(5v + 3) < -7v - 3v$



6) $p + 2 - 5p - 2 \le -4(p + 3) + 2(p - 1)$



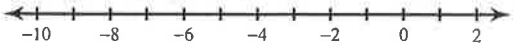
Translate the words into an inequality and graph. Then find all of the choices that would have this graph as a solution.

7) A number is at least −3.

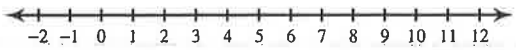
A) $x + 23 \ge -4(x - 2)$
B) $2x + 7 - x \ge 2x + 4$
C) $-6x \le 18$
D) $2(x + 1) \le 3x + 5$

Solve each compound inequality and graph its solution.

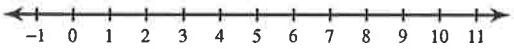
8) $-1 < \frac{x}{8} \leq 0$



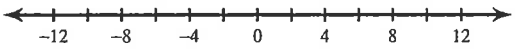
9) $x - 7 \geq 1$ or $2 + x \leq 3$



10) $10x - 1 < 39$ or $6 - 8x < -42$



11) $5k + 5 \leq -40$ or $-8 - 5k < -48$



12) The French club is sponsoring a bake sale. If their goal is to raise at least \$140, how many pastries must they sell at \$3.50 each in order to meet that goal? Write and solve the inequality.

13) The width of a rectangle is 33 cm. The perimeter is at most 776 cm.
a) Write and solve an inequality to find the length of the rectangle.

b) Write an inequality to find the area of the rectangle.

14) Four times the quantity of the sum of a number and 15 is at least 120 and no more than 165. Write and solve a compound inequality to find all possible values of x.

Name: Date: Hour:

Algebra 1
Unit 3 Review

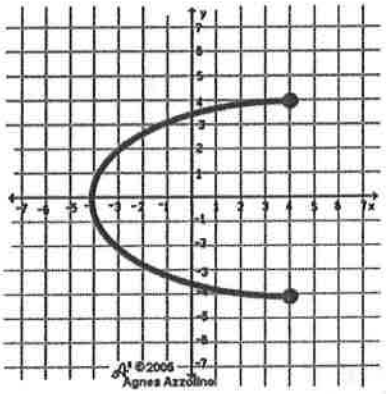
1. Find the domain and range of each relation. Then determine if it is a function. Is it a linear function?

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

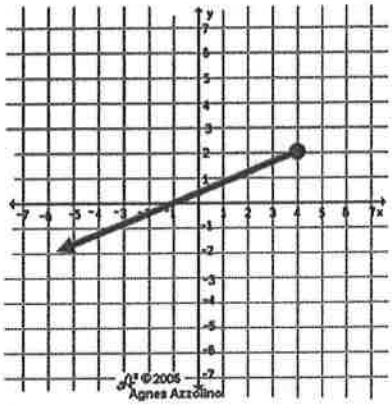
   c.

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

   b.



   d.



2. Given the set of points, illustrate the domain and range in 3 different ways (i.e. mapping, table, graph).

   {(-1, 2), (1, 9), (-1, -3), (3, 9), (5, 8)}

3. If $f(x)=2x^2+3$ and $g(x)=-4+2x$, evaluate each of the following.

   a. $g(2)$ b. $f(-1)$ c. $g(3)+f(-4)$

4. Alan pays AT&T a flat fee of $60 a month plus $0.20 per minute over his monthly package. Write a function to represent Alan's total bill.
   a. How much is Alan's bill if he talks 10 minutes over his monthly package?

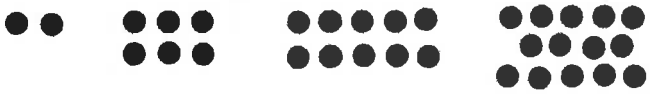
   b. If Alan's bill was $80.20 how many minutes did he go over his monthly package?

Write a function to represent each table, pattern or sequence.

5.

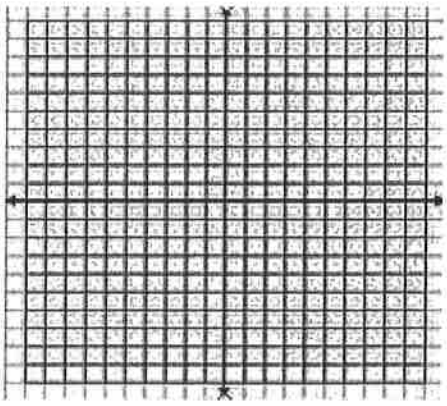
x	2	4	6	8	10
f(x)	-4	-1	2	5	8

6. $a_1 = 10 \quad d = -4$

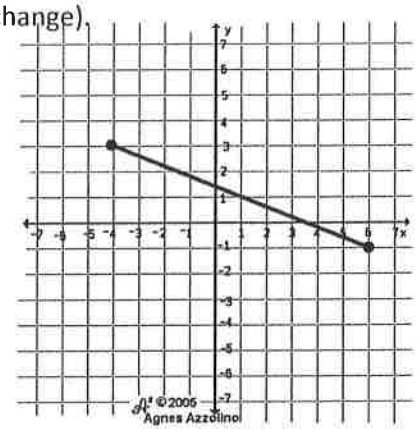
7. 

Construct a graph, given the information below.

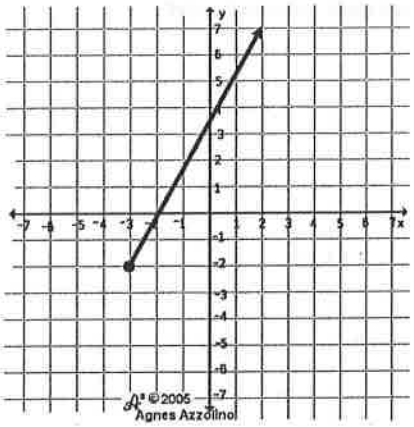
8. $f(x) = 3x - 1$



9. Compare the functions below (steepness, domain, and range, positive vs. negative rate of change).

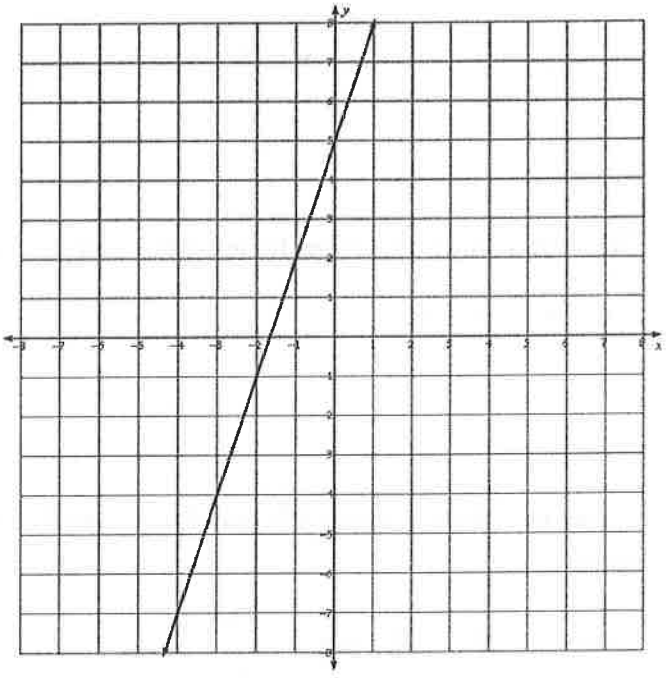


Steepness:
Domain:
Range:
Positive/Negative
y-intercept:
x-intercept:



Steepness:
Domain:
Range:
Positive/Negative
y-intercept:
x-intercept:

10. Using the graph to the right, find the following:
    a. x-intercept
    b. y-intercept
    c. f(-3)
    d. find x when f(x) = 8



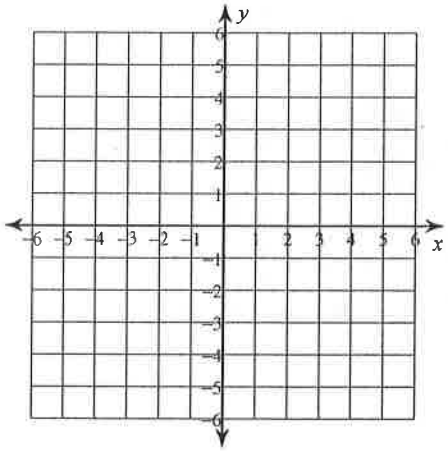
11. Find the x- and y-intercepts of the following equations.
    e. $-3y+4x=-24$
    b. $6x=2y+12$

Algebra 1 Name_____

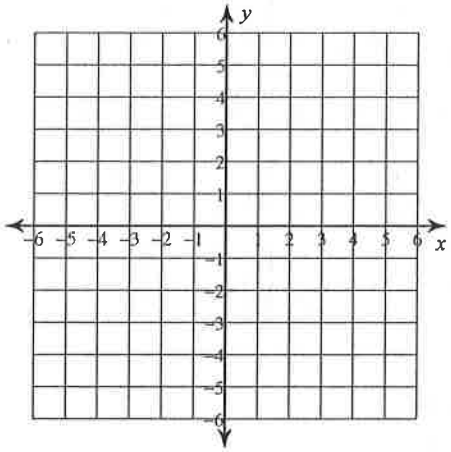
Final Review - Unit 4 WS

Sketch the graph of each line.

1) $5x + 3y = -6$



2) $3x - y = 4$



Write the slope-intercept form of the equation of each line given the slope and y-intercept.

3) Slope $= \frac{3}{4}$, y-intercept $= 0$

Write the slope-intercept form of the equation of each line.

4) $6x + 7y = -56$

Write the slope-intercept form of the equation of the line through the given point with the given slope.

5) through: $(0, -5)$, slope $= \frac{10}{3}$

6) through: $(-1, -3)$, slope $= -\frac{7}{3}$

Write the slope-intercept form of the equation of the line through the given points.

7) through: $(-1, -5)$ and $(-2, 1)$

8) through: $(-2, -1)$ and $(-4, -4)$

Write the slope-intercept form of the equation of the line described.

9) through: $(-3, 3)$, parallel to $y = -6x + 5$

10) through: $(-3, -4)$, parallel to $y = -5$

11) through: $(-3, 2)$, perp. to $y = x - 2$

12) through: $(-5, 5)$, perp. to $y = 4$

Describe each transformation from the parent function.

13) $y = \frac{8}{3}x + 3$

14) $y = -\frac{3}{4}x - 3$

Name: KEY Date: Hour:

Algebra 1 – Unit 1
Final Review

Simplify each radical expression.

1. $-2\sqrt{24}$

$-2\sqrt{4}\sqrt{6}$

$-2(2)\sqrt{6}$

$\boxed{-4\sqrt{6}}$

2. Order the numbers below from least to greatest and classify each.

$$-\sqrt{12}, -3, -5.\overline{66}, 0, 2, -\frac{2}{3}$$

$-\sqrt{12} = -3.46$

$-3 = -3$

$-5.\overline{66} = -5.\overline{66}$

$0 = 0$

$2 = 2$

$-\frac{2}{3} = -0.67$

Number	Real	Rational	Irrational	Integer	Whole	Natural
$-5.\overline{66}$	✓	✓				
$-\sqrt{12}$	✓		✓			
-3	✓	✓		✓		
$-\frac{2}{3}$	✓	✓				
0	✓	✓		✓	✓	
2	✓	✓		✓	✓	✓

3. If $4(x-2)+6x=12+5x$, what is the value of $2x-3$?

$4x - 8 + 6x = 12 + 5x$

$10x - 8 = 12 + 5x$

$-5x \quad -5x$

$5x - 8 = 12$

$+8 \quad +8$

$\frac{5x}{5} = \frac{20}{5}$

$x = 4$

$2(4) - 3$

$8 - 3$

$\boxed{5}$

4. Write and solve an equation to represent the following:

The quotient of 6 and the quantity of 2 times a number added to 4 is equal to 8

$\frac{6}{2x+4} = 8$

$6 = 8(2x+4)$

$6 = 16x + 32$

$-32 \quad -32$

$-26 = 16x$

$\frac{-26}{16} = \frac{16x}{16}$

$\boxed{x = -\frac{13}{8}}$

Solve each equation.

5. $3(2x-5) = 2(3x-2)$

$6x - 15 = 6x - 4$

$-6x \quad -6x$

$-15 = -4$ | No Solution

6. On the first day of the year, Alicia has $1000 in her savings account and started spending $25 a week. Her sister Kelsey had $650 in her savings account and started saving $15 a week. After how many weeks will the sisters have the same amount? What will that amount be?

$1000 - 25x = 650 + 15x$

$+25x \quad +25x$

$1000 = 650 + 40x$

$-650 \quad -650$

$350 = 40x$

$\frac{350}{40} = \frac{40x}{40}$

$8.75 = x$

8.75 weeks

7. A cyclist travels 56 miles in 4 hours. What is the cyclist speed in feet per minutes?

$$\frac{56 \text{ miles}}{4 \text{ hours}} \cdot \frac{1 \text{ hour}}{60 \text{ minutes}} \cdot \frac{5280 \text{ ft}}{1 \text{ mile}} = \frac{295{,}680 \text{ feet}}{240 \text{ minutes}} = 1232 \text{ feet/min.}$$

8. The ratio of junior varsity members to varsity members on the track team is 3:5. There are 25 varsity members on the team. Write and solve a proportion to find the number of junior varsity members.

$\frac{3}{5} = \frac{x}{25}$

$5x = 3(25)$

$\frac{5x}{5} = \frac{75}{5}$

$x = 15$ JV members

9. Solve the equation. Write a justification for each step.

Statements	Reasons
$-(x+4) = 2x+6$	Given
$-x-4 = 2x+6$	Distributive Property
$+x \quad +x$	Addition POE
$-4 = 3x+6$	Simplify
$-6 \quad -6$	Subtraction POE
$\frac{-10}{3} = \frac{3x}{3}$	Simplify
	Division POE

$-\frac{10}{3} = x$ Simplify

10. You have decided to paint the outside of your house. The total amount of space you will be painting is 1000 square feet. You found a hardware store nearby that sells the paint you would like. Below are the sizes of paint available.

Find cost per sq. foot

1 gallon (covers 80 square feet) - $45 $\quad \frac{\$45}{80} = .56$

5 gallon (covers 400 square feet) - $110 $\quad \frac{\$110}{400} = 0.275$

How can you cover the 1000 square feet in the most cost effective way?

Opt 1

2 5 Gall (400) = 800 $\quad 2(110) = 220$

3 1 Gall (80) = 240 $\quad 3(45) \; 135$

1040 sq. ft $\quad \$355$

Opt 2

3 5 Gall $\quad 3(400) = 1200$ sq. ft

$3(\$110) = \$330$

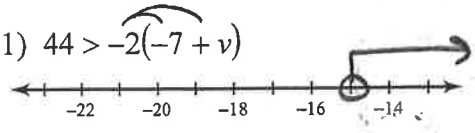
3 5 Gallon Buckets

Algebra 1 Name_____

Final Review - Unit 2

Solve each inequality and graph its solution.

1) $44 > -2(-7 + v)$



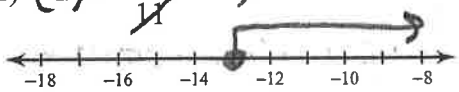
$44 > 14 - 2v$

$-14 \quad -14$

$\frac{30}{-2} > \frac{-2v}{-2}$

$-15 < v \rightarrow v > -15$

2) $-2 \leq \frac{-9 + x}{11} \cdot 11$

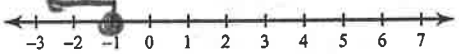


$-22 \leq -9 + x$

$+9 \quad +9$

$-13 \leq x$ $\quad x \geq -13$

3) $7(6k + 3) \leq -14 + 7k$



$42k + 21 \leq -14 + 7k$

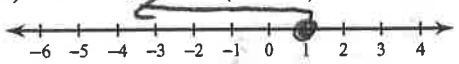
$-7k \quad -7k$

$35k + 21 \leq -14$

$-21 \quad -21$

$\frac{35k}{35} \leq \frac{-35}{35}$ $\quad k \leq -1$

4) $-26 + 8k \leq -6(7k - 4)$



$-26 + 8k \leq -42k + 24$

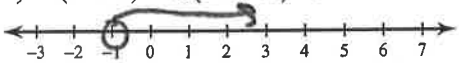
$+42k \quad +42k$

$-26 + 50k \leq 24$

$+26 \quad +26$

$\frac{50k}{50} \leq \frac{50}{50}$ $\quad k \leq 1$

5) $8(1 + v) - 5(5v + 3) < -7v - 3v$



$8 + 8v - 25v - 15 < -10v$

$-17v - 7 < -10v$

$+17v \quad +17v$

$\frac{-7}{7} < \frac{7v}{7}$ $\quad -1 < v$

$v > -1$

6) $p + 2 - 5p - 2 \leq -4(p + 3) + 2(p - 1)$

$-4p \leq -4p - 12 + 2p - 2$

$-4p \leq -2p - 14$

$+2p \quad +2p$

$\frac{-2p}{-2} \leq \frac{-14}{-2}$ $\quad p \geq 7$

Translate the words into an inequality and graph. Then find all of the choices that would have this graph as a solution.

7) A number is at least –3. $\rightarrow x \geq -3$

(A) $x + 23 \geq -4(x - 2)$

B) $2x + 7 - x \geq 2x + 4$

(C) $-6x \leq 18$

(D) $2(x + 1) \leq 3x + 5$

A) $x + 23 \geq -4x + 8$

$+4x \quad +4x$

$5x + 23 \geq 8$

$-23 \quad -23$

$\frac{5x}{5} \geq \frac{-15}{5}$

$x \geq -3$

B) $x + 7 \geq 2x + 4$

$-x \quad -x$

$7 \geq x + 4$

$-4 \quad -4$

$3 \geq x$

$x \leq 3$

C) $\frac{-6x}{-6} \leq \frac{18}{-6}$

$x \geq -3$

D) $2x + 2 \leq 3x + 5$

$-2x \quad -2x$

$2 \leq x + 5$

$-5 \quad -5$

$-3 \leq x$

$x \geq -3$

Solve each compound inequality and graph its solution.

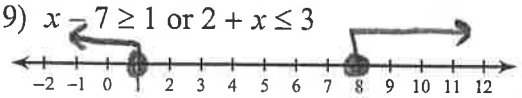
8) $-1 < \frac{x}{8} \leq 0$

(8) $-1 < \frac{x}{8} \cdot 8$ & $\frac{x}{8} \leq 0 \cdot 8$

$-8 < x \quad x \leq 0$

$-8 < x \leq 0$

9) $x - 7 \geq 1$ or $2 + x \leq 3$



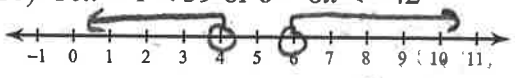
$x - 7 \geq 1$ $\quad +7 \quad +7$

$x \geq 8$

$2 + x \leq 3$ $\quad -2 \quad -2$

$x \leq 1$

10) $10x - 1 < 39$ or $6 - 8x < -42$



$10x - 1 < 39$ $\quad +1 \quad +1$

$\frac{10x}{10} < \frac{40}{10}$

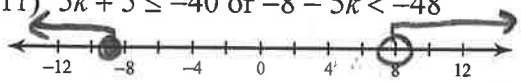
$x < 4$

$6 - 8x < -42$ $\quad -6 \quad -6$

$\frac{-8x}{-8} < \frac{-48}{-8}$

$x > 6$

11) $5k + 5 \leq -40$ or $-8 - 5k < -48$



$5k + 5 \leq -40$ $\quad -5 \quad -5$

$\frac{5k}{5} \leq \frac{-45}{5}$

$k \leq -9$

$-8 - 5k < -48$ $\quad +8 \quad +8$

$\frac{-5k}{-5} < \frac{-40}{-5}$

$k > 8$

12) The French club is sponsoring a bake sale. If their goal is to raise at least \$140, how many pastries must they sell at \$3.50 each in order to meet that goal? Write and solve the inequality.

$\frac{3.50x}{3.50} \geq \frac{140}{3.50}$

$x \geq 40$ pastries

13) The width of a rectangle is 33 cm. The perimeter is at most 776 cm.

a) Write and solve an inequality to find the length of the rectangle.

$2w + 2l \leq 776$

$2(33) + 2l \leq 776$

$66 + 2l \leq 776$

$-66 \quad -66$

$\frac{2l}{2} \leq \frac{710}{2}$

$l \leq 355$ cm

b) Write an inequality to find the area of the rectangle.

$l \cdot w \leq A$

$(355)(33) \leq A$

$11{,}715 \leq A$

$A \geq 11{,}715$ cm^2

14) Four times the quantity of the sum of a number and 15 is at least 120 and no more than 165. Write and solve a compound inequality to find all possible values of x.

$4(x + 15) \geq 120$

$4x + 60 \geq 120$

$-60 \quad -60$

$\frac{4x}{4} \geq \frac{60}{4}$

$x \geq 15$

$4(x + 15) \leq 165$

$4x + 60 \leq 165$

$-60 \quad -60$

$\frac{4x}{4} \leq \frac{105}{4}$

$x \leq 26.25$

So, $120 \leq 4(x + 15) \leq 165$

$15 \leq x \leq 26.25$

Name: Date: Hour:

Algebra 1
Unit 3 Review

1. Find the domain and range of each relation. Then determine if it is a function. Is it a linear function?

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

D: {1, -1, 2, 8, -2}
R: {5, 3, 7, 10, 3}

X	Y
-2	3
-1	3
1	5
2	7
8	10

Function, Not Linear

c.

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

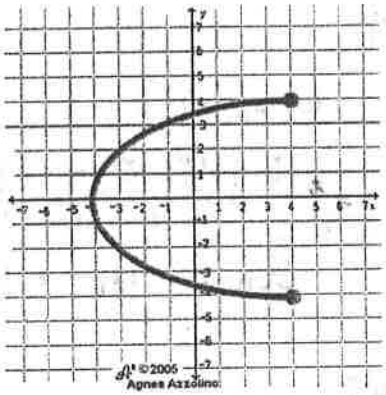
+2 +1 +1 +2

+4 +4 +4 +4

D: {-3, -1, 0, 1, 3}
R: {2, 6, 10, 14, 18}

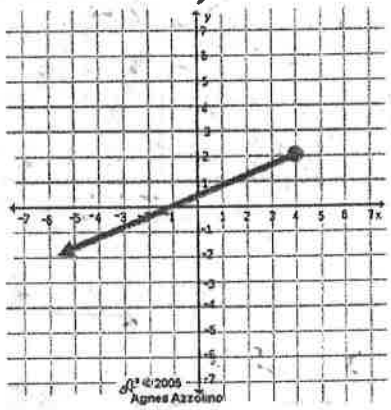
Function, Not Linear

b.



D: {-4 ≤ x ≤ 4}
R: {-4 ≤ y ≤ 4}
Not a Function

d.

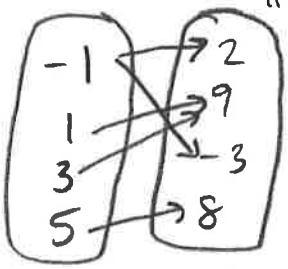


D: {x ≤ 4}
R: {y ≤ 2}
Function, Linear

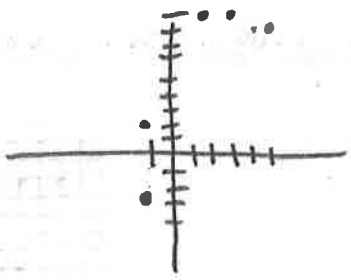
2. Given the set of points, illustrate the domain and range in 3 different ways (i.e. mapping, table, graph).

{(-1, 2), (1, 9), (-1, -3), (3, 9), (5, 8)}

Possible:



X	Y
-1	2
-1	-3
1	9
3	9
5	8



3. If $f(x) = 2x^2 + 3$ and $g(x) = -4 + 2x$, evaluate each of the following.

a. $g(2)$

$g(2) = -4 + 2(2)$
$= -4 + 4$
$g(2) = 0$

b. $f(-1)$

$f(-1) = 2(-1)^2 + 3$
$= 2(1) + 3$
$2 + 3$
$f(-1) = 5$

c. $g(3) + f(-4)$

$g(3) = -4 + 2(3)$
$= -4 + 6 = 2$

$f(-4) = 2(-4)^2 + 3$
$= 2(16) + 3$
$= 32 + 3 = 35$

$2 + 35 = \boxed{37}$

$f(x) = 0.20x + 60$

4. Alan pays AT&T a flat fee of $60 a month plus $0.20 per minute over his monthly package. Write a function to represent Alan's total bill.

   a. How much is Alan's bill if he talks 10 minutes over his monthly package?

$$f(10) = 0.20(10) + 60$$
$$= 2 + 60$$
$$= \$62$$

   b. If Alan's bill was $80.20 how many minutes did he go over his monthly package?

$$80.20 = 0.20x + 60$$
$$-60 \quad -60$$
$$\frac{20.20}{0.20} = \frac{0.20x}{0.20}$$
$$101 = x$$

101 minutes

Write a function to represent each table, pattern or sequence.

5.

x	2	4	6	8	10
f(x)	-4	-1	2	5	8

0 (+2, +2, +2, +2) | -7 (+3, +3, +3, +3)

$f(x) = \frac{3}{2}x - 7$

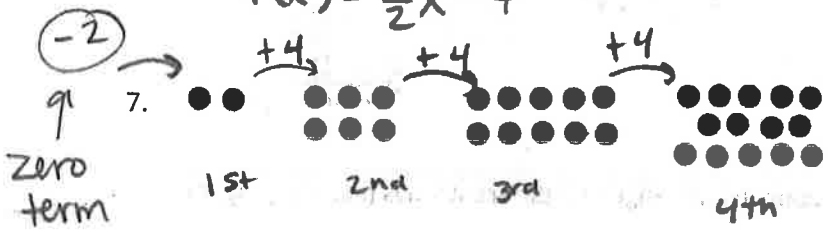
6. $a_1 = 10 \quad d = -4$

14, 10, 6, 2, -2, ...
1st 2nd 3rd ...

zero term

$a_n = -4n + 14$

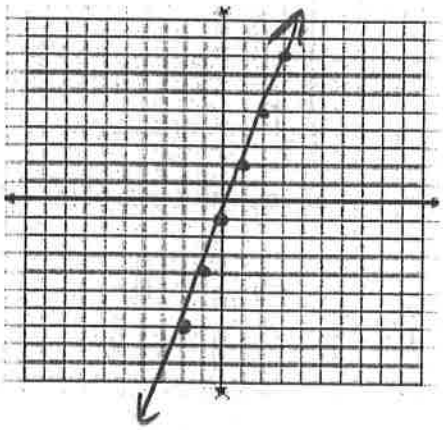
7.



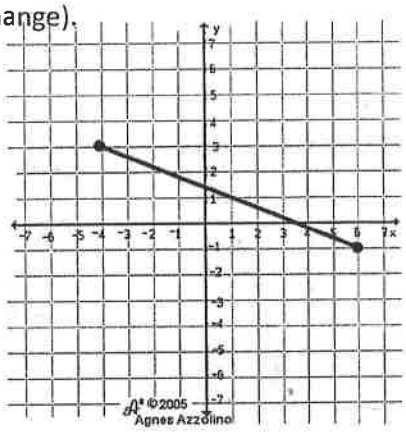
$f(x) = 4x - 2$

Construct a graph, given the information below.

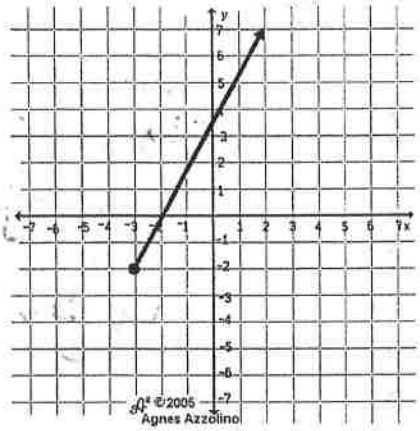
8. $f(x) = 3x - 1$



9. Compare the functions below (steepness, domain, and range, positive vs. negative rate of change).



Steepness: Less Steep
Domain: $\{-4 \le x \le 6\}$
Range: $\{-1 \le y \le 3\}$
Positive/Negative
y-intercept: 1.5
x-intercept: 3.5



Steepness: Steeper
Domain: $\{x \ge -3\}$
Range: $\{y \ge -2\}$
Positive/Negative
y-intercept: 3.5
x-intercept: -2

10. Using the graph to the right, find the following:

a. x-intercept

-1.5

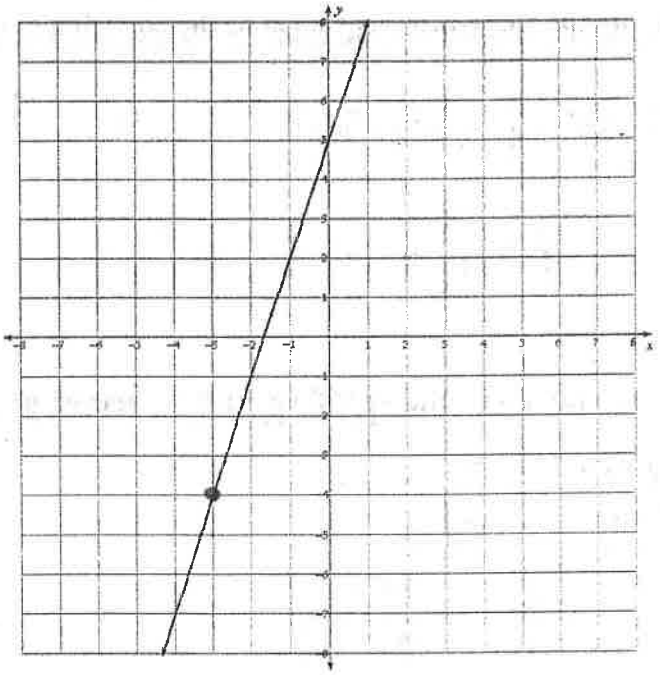
b. y-intercept

3

c. f(-3) = -4

d. find x when f(x) = 8

1



x-int: $y=0$ y-int: $x=0$

11. Find the x- and y-intercepts of the following equations.

e. $-3y+4x=-24$

x-int
$-3(0)+4x=-24$
$\frac{4x}{4}=\frac{-24}{4}$
$x=-6$
$(-6,0)$

y-int
$-3y+4(0)=-24$
$\frac{-3y}{3}=\frac{-24}{-3}$
$y=8$
$(0,8)$

b. $6x=2y+12$

y-int
$6(0)=2y+12$
$0=2y+12$
$-12 \quad -12$
$\frac{-12}{2}=\frac{2y}{2}$ $-6=y$
$(0,-6)$

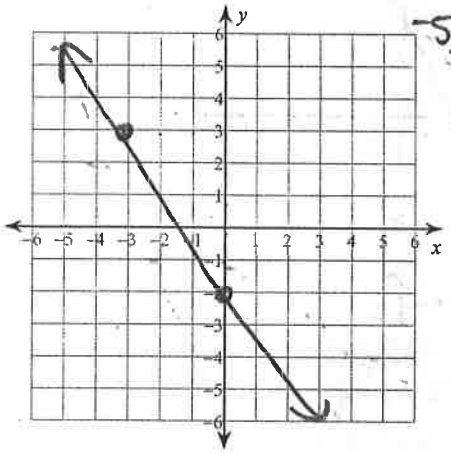
x-int
$6x=2(0)+12$
$\frac{6x}{6}=\frac{12}{6}$
$x=2$
$(2,0)$

Algebra 1 Name _____

Final Review - Unit 4 WS

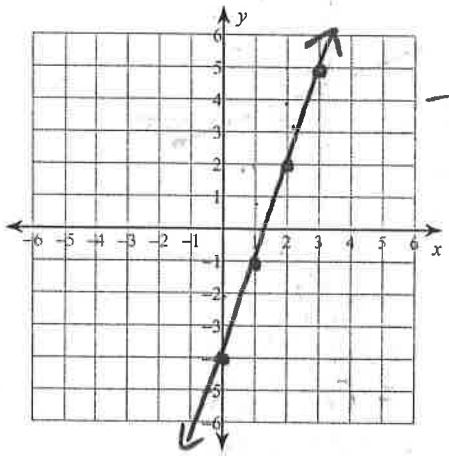
Sketch the graph of each line.

1) $5x + 3y = -6$



$5x+3y=-6$
$-5x \quad -5x$
$\frac{3y}{3} = \frac{-5x}{3} - \frac{6}{3}$
$y = -\frac{5}{3}x - 2$

2) $3x - y = 4$



$3x-y=4$
$-3x \quad -3x$
$\frac{-y}{-1} = \frac{-3x}{-1} + \frac{4}{-1}$
$y = 3x - 4$

Write the slope-intercept form of the equation of each line given the slope and y-intercept.

3) Slope $= \frac{3}{4}$, y-intercept $= 0$

$y = mx + b$

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

Write the slope-intercept form of the equation of each line.

4) $6x + 7y = -56$

$-6x \quad -6x$
$\frac{7y}{7} = \frac{-6x}{7} - \frac{56}{7}$
$y = \frac{-6}{7}x - 8$

Write the slope-intercept form of the equation of the line through the given point with the given slope.

5) through: $(0, -5)$, slope $= \frac{10}{3}$

$y = mx + b$

$-5 = \frac{10}{3}(0) + b$

$-5 = b$

$y = \frac{10}{3}x - 5$

6) through: $(-1, -3)$, slope $= -\frac{7}{3}$

$y = mx + b$

$-3 = -\frac{7}{3}(-1) + b$

$3(-3) = \left(\frac{7}{3} + b\right)3$

$-9 = 7 + 3b$

$-7 \quad -7$

$\frac{-16}{3} = \frac{3b}{3}$

$y = -\frac{7}{3}x - \frac{16}{3}$

Write the slope-intercept form of the equation of the line through the given points.

7) through: $(-1, -5)$ and $(-2, 1)$

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

$m = \frac{1+5}{-2+1} = \frac{6}{-1} = -6$

$y = mx + b$

$1 = -6(-2) + b$

$1 = 12 + b$

$-12 \quad -12$

$-11 = b$

$y = -6x - 11$

8) through: $(-2, -1)$ and $(-4, -4)$

$m = \frac{-4+1}{-4+2} = \frac{-3}{-2} = \frac{3}{2}$

$y = mx + b$

$-4 = \frac{3}{2}(-4) + b$

$-4 = -6 + b$

$+6 \quad +6$

$2 = b$

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

Write the slope-intercept form of the equation of the line described.

9) through: $(-3, 3)$, parallel to $y = -6x + 5$

$y = mx + b$

$3 = -6(-3) + b$

$3 = 18 + b$

$-18 \quad -18$

$-15 = b$

$y = -6x - 15$

10) through: $(-3, -4)$, parallel to $y = -5$

$m = 0$

$y = mx + b$

$-4 = 0(-3) + b$

$-4 = b$

$y = -4$

11) through: $(-3, 2)$, perp. to $y = x - 2$

$m = -1$

$y = mx + b$

$2 = (-1)(-3) + b$

$2 = 3 + b$

$-3 \quad -3$

$-1 = b$

$y = -1x - 1$

12) through: $(-5, 5)$, perp. to $y = 4$ slope = undefined

$x = -5$

Describe each transformation from the parent function.

13) $y = \frac{8}{3}x + 3$

Rotated by factor $\frac{8}{3}$

Shifted up 3

14) $y = -\frac{3}{4}x - 3$

Reflected

Rotated by factor of $\frac{3}{4}$

Shifted Down 3

Write the inverse function.

15) $y = 3x - 2$

$x = 3y - 2$

$+2 \quad +2$

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

$y = \frac{1}{3}x + \frac{2}{3}$

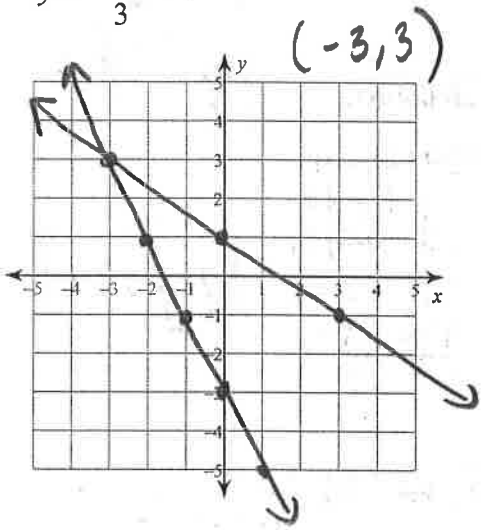
Algebra 1 Name _____

Final Review - Unit 5 WS

Solve each system by graphing.

1) $y = -2x - 3$

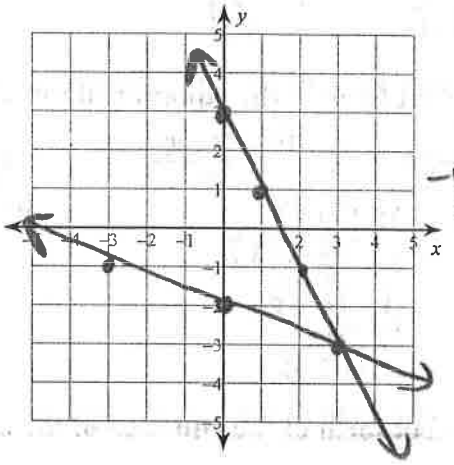
$y = -\frac{2}{3}x + 1$



2) $2x + y = 3$

$x + 3y = -6$

$y = -2x + 3$



$x + 3y = -6$

$-x \quad -x$

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

$y = -\frac{1}{3}x - 2$

(3,-3)

Solve each system by substitution.

3) $-9x + 3y = -27$

$y = 3x - 9$

$-9x + 3(3x-9) = -27$

$-9x + 9x - 27 = -27$

$-27 = -27$

Infinite Solutions

4) $3x - 4y = -1$

$-3(x - 5y = 18)$

$3x - 4y = -1$

$-3x + 15y = -54$

$\frac{11y}{11} = \frac{-55}{11}$

$y = -5$

$x - 5(-5) = 18$

$x + 25 = 18$

$-25 \quad -25$

$x = -7$

(-7, -5)

Solve each system by elimination.

5) $\begin{cases} x - 3y = 3 \\ 5x - 3y = 27 \end{cases}$

$-x + 3y = -3$

$5x - 3y = 27$

$\frac{4x}{4} = \frac{24}{4}$

$x = 6$

$6 - 3y = 3$

$-6 \quad -6$

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

$y = 1$

$(6, 1)$

6) $\begin{cases} -36x + 36y = -27 \\ 28x - 28y = 28 \end{cases}$

$-1008x + 1008y = -756$

$1008x - 1008y = 1008$

$0 = 252$

No Solution

Difficult to set up

7) The sum of the digits of a certain two-digit number is 11. Reversing its digits decreases the number by 27. What is the number?

$10x + y$ = original number

$10y + x$ = Number when digits are reversed

$x + y = 11$

$10y + x = 10x + y - 27$

$-y \quad -10x \quad -10x \quad -y$

$9y - 9x = -27$

$9(x + y = 11) \rightarrow 9x + 9y = 99$

$-9x + 9y = -27$

$\frac{18y}{18} = \frac{72}{18}$

$y = 4$

$x + 4 = 11$

$-4 \quad -4$

$x = 7$

The # is 74

8) The school that Julia goes to is selling tickets to a play. On the first day of ticket sales the school sold 9 senior citizen tickets and 9 student tickets for a total of \$144. The school took in \$166 on the second day by selling 6 senior citizen tickets and 13 student tickets. Find the price of a senior citizen ticket and the price of a student ticket.

X - Seniors

Y - Students

$-6(9x + 9y = 144) = -54x - 54y = -864$

$9(6x + 13y = 166) = 54x + 117y = 1494$

$\frac{63y}{63} = \frac{630}{63}$

$y = 10$

$9x + 9(10) = 144$

$9x + 90 = 144$

$-90 \quad -90$

$\frac{9x}{9} = \frac{54}{9}$

$x = 6$

\$6 senior ticket

\$10 student ticket