

Algebra 2
1.1 Worksheet

Name _____

Solve the following equations. Show all work to receive credit. No decimal answers.

1) $3x - 5(2 - 4x) = 18$

2) $17 + 11x = -19x - 25$

3) $\frac{2}{3}b - 4 = -7$

4) $\frac{6x+9}{4} = 2x$

5) $\frac{3}{7-x} = \frac{5}{x+1}$

6) $4(2x - 1) - 5x = 2 + 4(3 - x)$

7) $-2 = \frac{13}{4y+1}$

8) $4x^2 = 100$

9) $3x^2 - 1 = 26$

10) Solve for y : $3y - 2x = 12$

- 11) Three students were chosen to show their solutions for solving the equation
 $y = a(x - h) + k$ for x . Their work is shown below. Determine which students were correct. (There may be more than one)

Student #1	Student #2	Student #3
$y = a(x - h) + k$	$y = a(x - h) + k$	$y = a(x - h) + k$
$y - k = a(x - h)$	$\frac{y}{a} = (x - h) + k$	$\frac{y}{a} = (x - h) + \frac{k}{a}$
$\frac{(y - k)}{a} = x - h$	$\frac{y}{a} - k = x - h$	$\frac{y}{a} - \frac{k}{a} = x - h$
$\frac{(y - k)}{a} + h = x$	$\frac{y}{a} - k + h = x$	$\frac{y}{a} - \frac{k}{a} + h = x$

12) Factor the trinomial: $x^2 - 7x + 6$

13) Factor the trinomial: $a^2 + 3a - 10$

14) Multiply: $(2x + 5)(3x - 1)$

15) Simplify: $\sqrt{49} + 2 \cdot \sqrt{25}$

16) Simplify: $\frac{\sqrt{16}}{\sqrt{9}}$

17) Solve the Inequality:
 $5x + 11 < 26$

18) Which of the following is the solution statement for the inequality shown below?

$$-5 < 1 - 3x < 10$$

- A) $-5 < x < 10$
- B) $-3 < x$
- C) $-3 < x < 2$
- D) $-2 < x < 3$
- E) $x < -3$ or $x > 2$

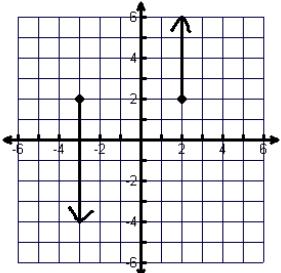
19) Solve the Inequality:
 $-9x \geq 36$

Algebra 2
1.2 Worksheet

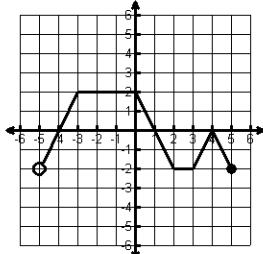
Name _____

State the domain and range for each graph and then tell if the graph is a function (write yes or no).

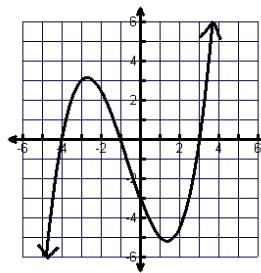
1) Domain _____
 Range _____
 Function? _____



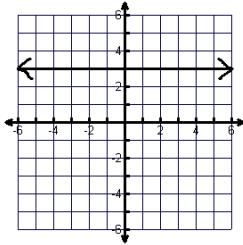
2) Domain _____
 Range _____
 Function? _____



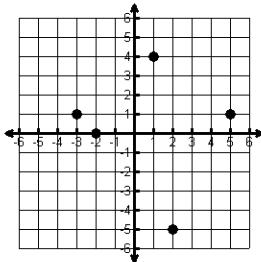
3) Domain _____
 Range _____
 Function? _____



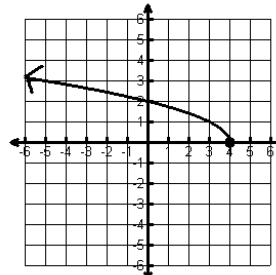
4) Domain _____
 Range _____
 Function? _____



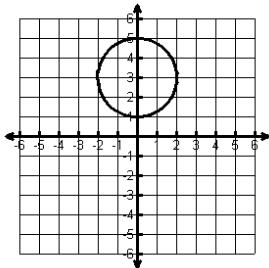
5) Domain _____
 Range _____
 Function? _____



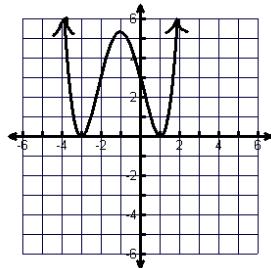
6) Domain _____
 Range _____
 Function? _____



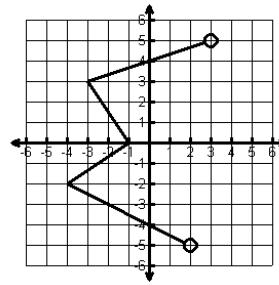
7) Domain _____
 Range _____
 Function? _____



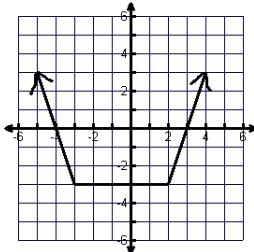
8) Domain _____
 Range _____
 Function? _____



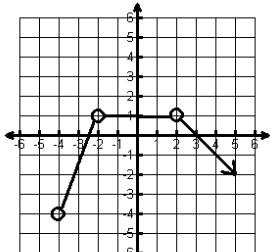
9) Domain _____
 Range _____
 Function? _____



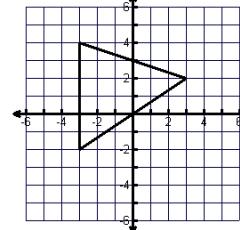
10) Domain _____
 Range _____
 Function? _____



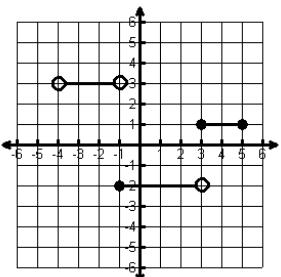
11) Domain _____
 Range _____
 Function? _____



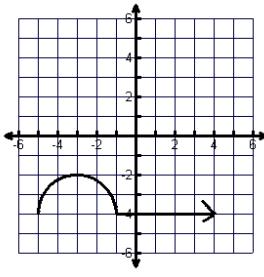
12) Domain _____
 Range _____
 Function? _____



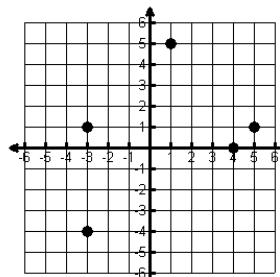
13) Domain _____
Range _____
Function? _____



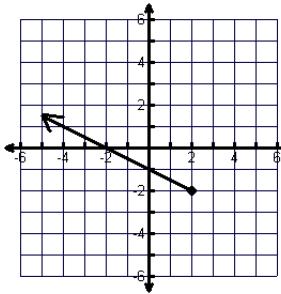
14) Domain _____
Range _____
Function? _____



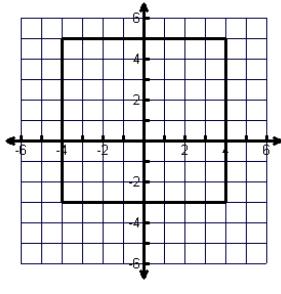
15) Domain _____
Range _____
Function? _____



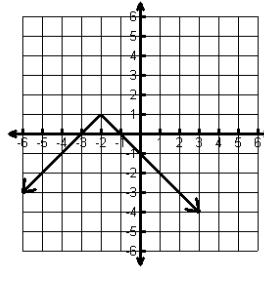
16) Domain _____
Range _____
Function? _____



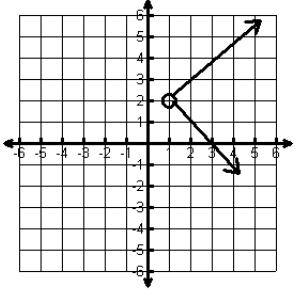
17) Domain _____
Range _____
Function? _____



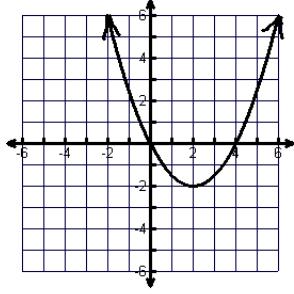
18) Domain _____
Range _____
Function? _____



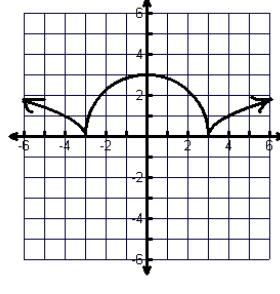
19) Domain _____
Range _____
Function? _____



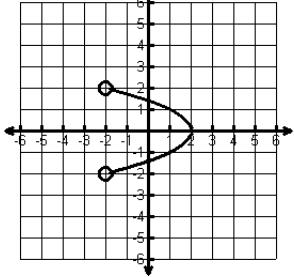
20) Domain _____
Range _____
Function? _____



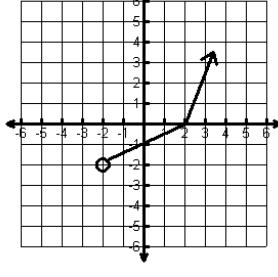
21) Domain _____
Range _____
Function? _____



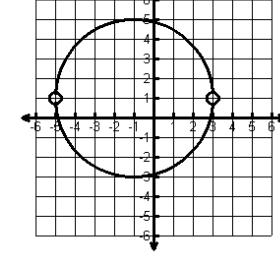
22) Domain _____
Range _____
Function? _____



23) Domain _____
Range _____
Function? _____



24) Domain _____
Range _____
Function? _____

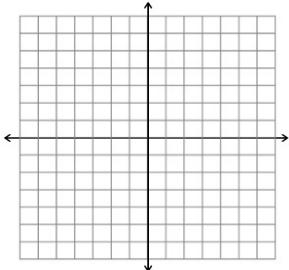


Algebra 2
1.3 Worksheet

Name _____

For #1 – 12: Graph each line on a coordinate system. Identify the domain and range for each graph.

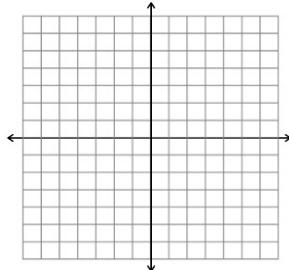
1) $y = -x - 4$



D:

R:

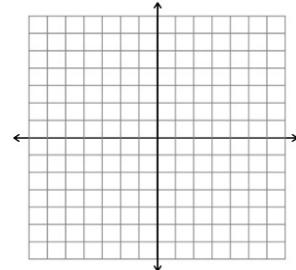
2) $y = 3x - 1$ if $x \geq -2$



D:

R:

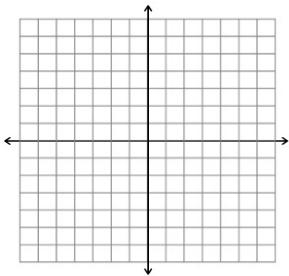
3) $3y = 5x + 12$



D:

R:

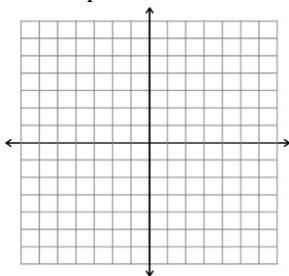
4) $y = -5$



D:

R:

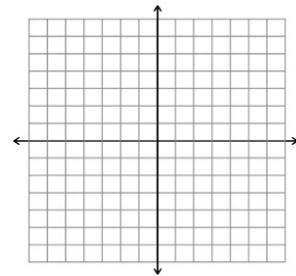
5) $y = \frac{1}{4}x + 5$ if $x < 0$



D:

R:

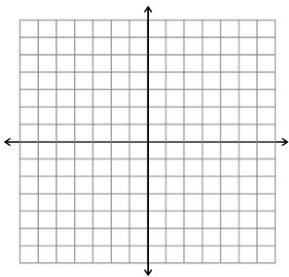
6) $x = -3$



D:

R:

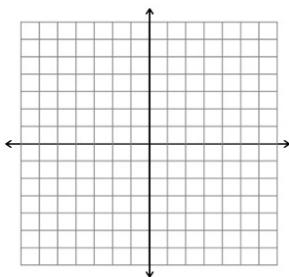
7) $y = 2x$



D:

R:

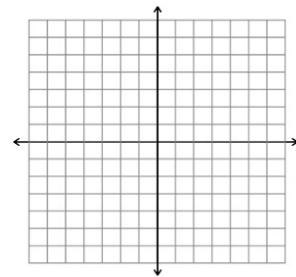
8) $y = -2x + 1$ if $-2 < x \leq 2$



D:

R:

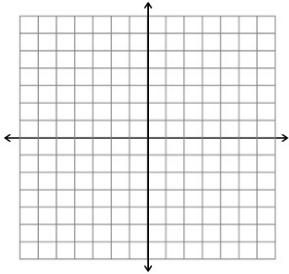
9) $5x - 2y = 8$



D:

R:

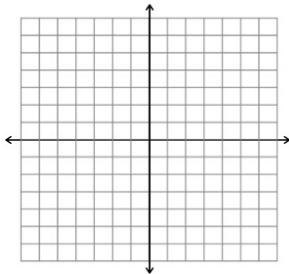
10) $x = 1$



D:

R:

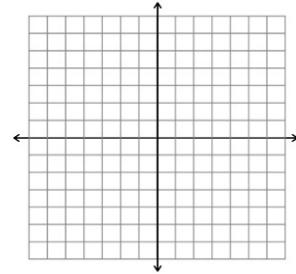
11) $-y = 5x - 4$



D:

R:

12) $y = 2$ if $-4 \leq x < 3$

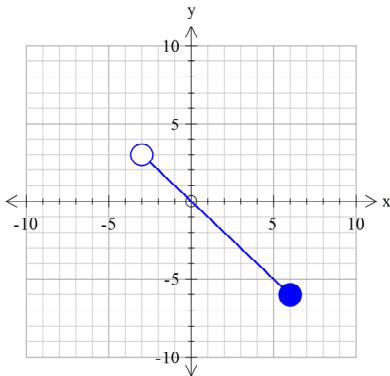


D:

R:

For #13- 15, describe the domain and range in interval notation.

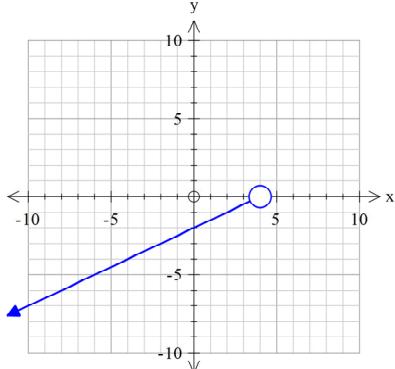
13)



Domain:

Range:

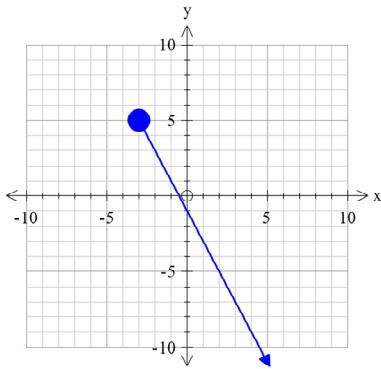
14)



Domain:

Range:

15)

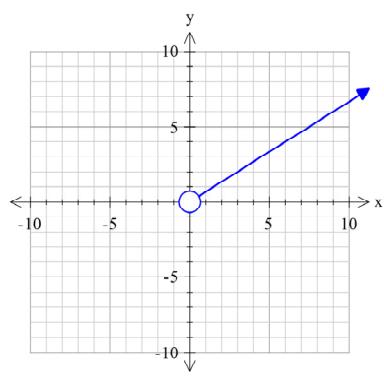


Domain:

Range:

For #16- 18, describe the domain and range in set notation.

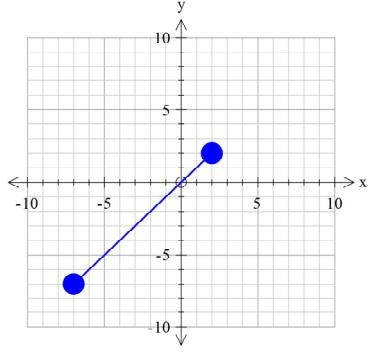
16)



Domain:

Range:

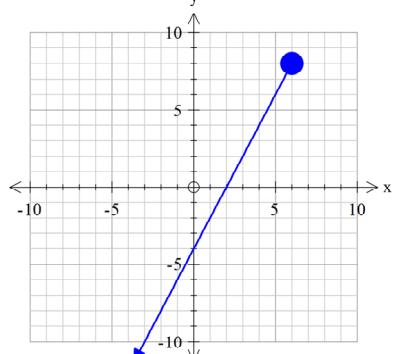
17)



Domain:

Range:

18)



Domain:

Range:

- 19) The table below shows points on a line.

x	-2	-1	0	1	2
y	-2	1	4	7	10

What is the slope of the line?

20) Factor: $x^2 + 5x + 6$

- A. $-\frac{1}{3}$
- B. $\frac{1}{3}$
- C. -3
- D. 3

21) Factor: $x^2 + 3x - 18$

Algebra 2
1.4 Worksheet

Name _____

Solve each system of equations by any method of your choice.

$$\begin{aligned} 1) \quad & y = 3x - 2 \\ & y = -x - 6 \end{aligned}$$

$$\begin{aligned} 2) \quad & 2x - 3y = -2 \\ & 4x + y = 24 \end{aligned}$$

$$\begin{aligned} 3) \quad & 7x + 2y = 16 \\ & -21x - 6y = 24 \end{aligned}$$

$$\begin{aligned} 4) \quad & 3x - 2y = -7 \\ & 2x + 3y = 17 \end{aligned}$$

$$\begin{aligned} 5) \quad & y = 2x - 9 \\ & 3x + 4y = -14 \end{aligned}$$

$$\begin{aligned} 6) \quad & 3x - 12y = 9 \\ & x = 4y + 3 \end{aligned}$$

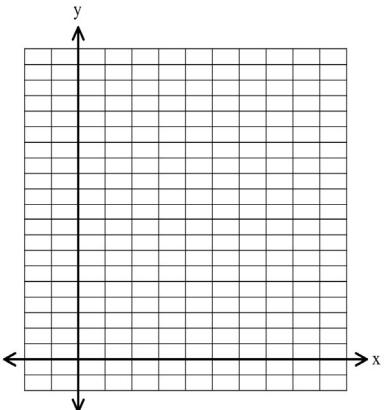
7) A party has fourteen guests. The number of women is eleven less than four times the number of males. Find the number of female guests.

8) Christina has seven bills in her wallet, and they are either fives or tens. The total value of the bills is \$55. How many of each type of bill does she have?

For #9-11: Angie went to a cooking festival over the weekend, and she paid an entrance fee of \$10, plus \$2 per item that she sampled. Todd went to a different cooking festival, and he paid \$2 for his entrance fee, plus \$4 per item.

- 9) Write a system of equations to model this situation.
Use y for the total cost and x for the number of items sampled.

- 10) Graph the system of equations.

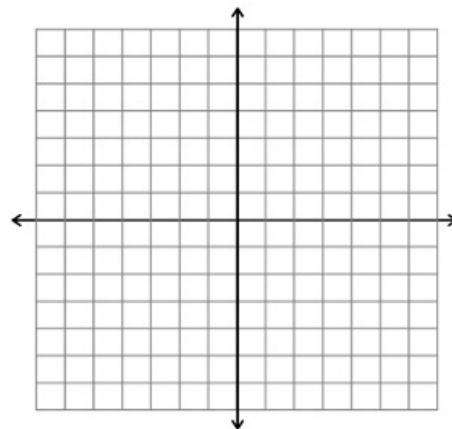
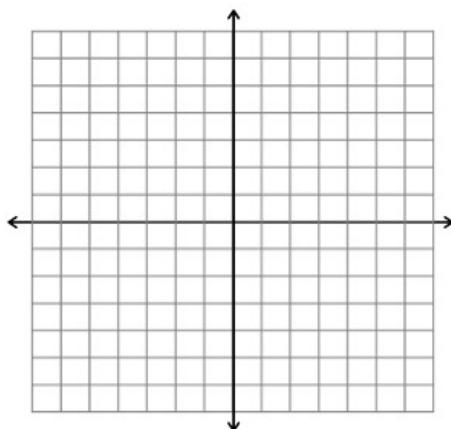


- 11) Angie and Todd both paid the same total amount after a certain number of items sampled. At how many items did they have the same cost?
What is that cost?

For #12-13, Solve the systems of inequalities by graphing

12) $\begin{cases} y > 2x - 3 \\ y < -x + 6 \end{cases}$

13) $\begin{cases} x + 2y \leq 4 \\ y \geq x - 3 \end{cases}$



**Algebra 2
Worksheet 1.5**

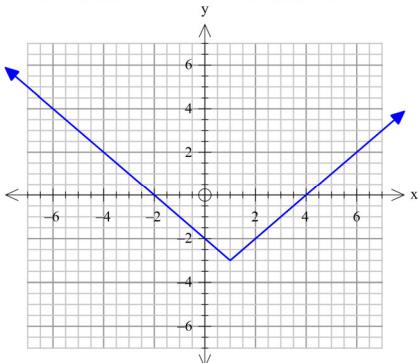
Name _____

For #1 – 6: Match each graph to its equation. Not all equations will be used.

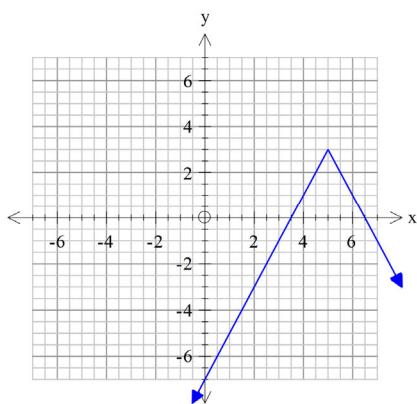
Choices:

- | | | | |
|---------------------------|--------------------------|-----------------------|-------------------------|
| a) $f(x) = -2 x - 5 + 3$ | b) $y = 3 x + 1 + 2$ | c) $y = 3 x - 1 + 2$ | d) $y = x - 1 - 3$ |
| e) $b(x) = - x - 4 - 1$ | f) $g(x) = - x + 4 - 1$ | g) $y = x + 2 + 3$ | h) $h(x) = x - 2 - 3$ |
| i) $y = - x + 4$ | j) $y = -3 x - 1 + 2$ | | |

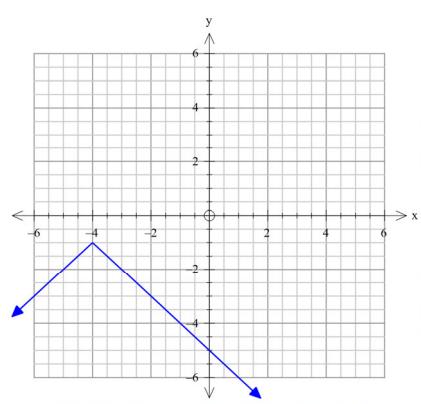
1)



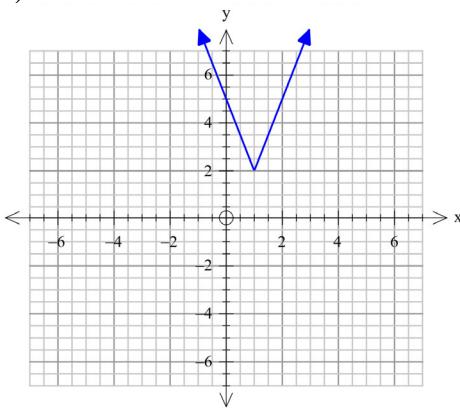
2)



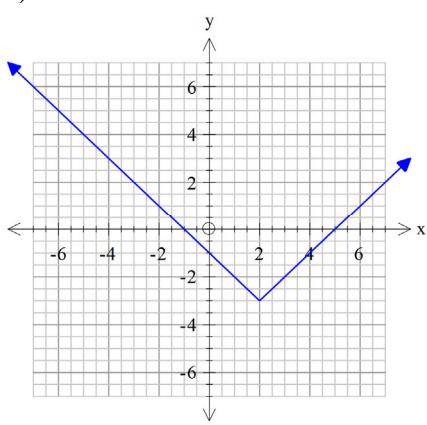
3)



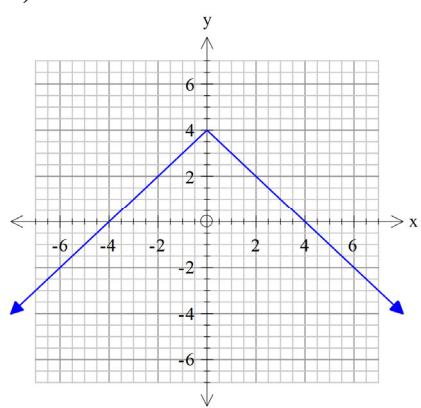
4)



5)

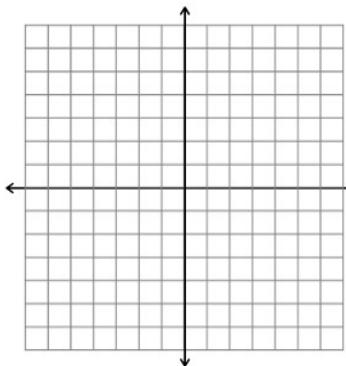


6)

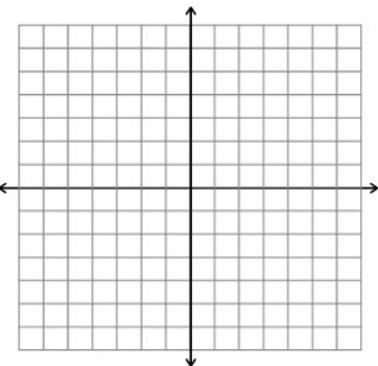


For #7 – 15, sketch the graph of each function, including its vertex. State the domain and range in set notation.

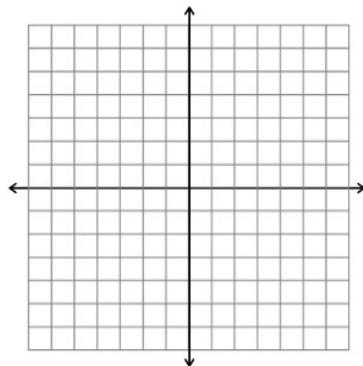
7) $y = -3(x + 2)$



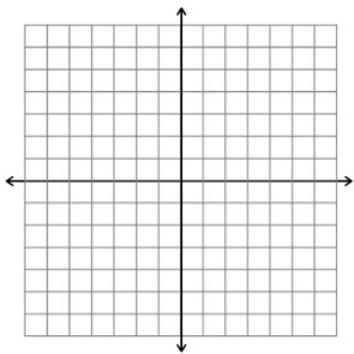
8) $y = |x - 1| - 2$



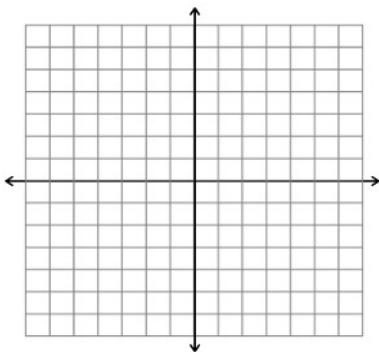
9) $g(x) = -2|x - 1| + 5$



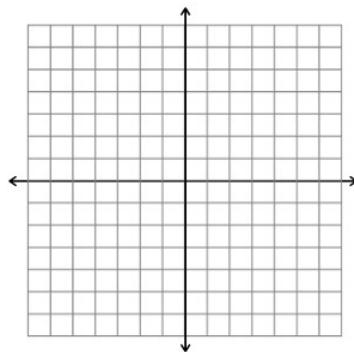
10) $f(x) = -2(x - 3) - 1$



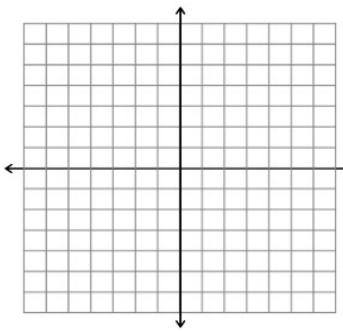
11) $y = |x| + 1$



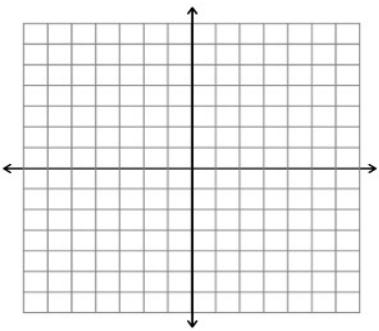
12) $y = \frac{1}{3}(x + 4) + 2$



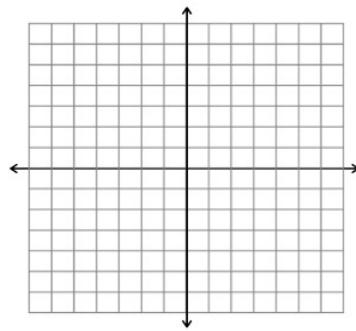
13) $y = -x + 5$



14) $y = -3|x - 4|$



15) $h(x) = 3|x - 2| - 5$



16) Factor: $x^2 - 8x + 15$

17) Multiply: $(x - 2)(3x + 1)$

18) Solve: $-\frac{5}{6}x + 3 = -9$

19) The function $y = x$ is transformed with a horizontal shift to the right 3 units, a vertical reflection, and a vertical stretch by a factor of 2. Which of the following shows the new equation of the function?

A) $y = 2(x + 3) - 1$

B) $y = -2x + 3$

C) $y = -(x - 3) + 2$

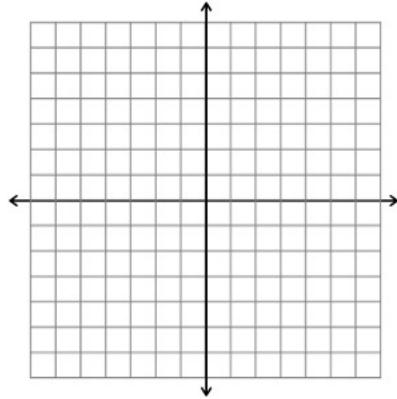
D) $y = -2(x - 3)$

Algebra 2
1.6 Worksheet

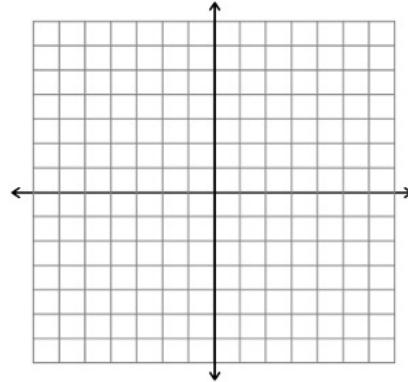
Name _____

For #1 – 4, graph each piecewise function.

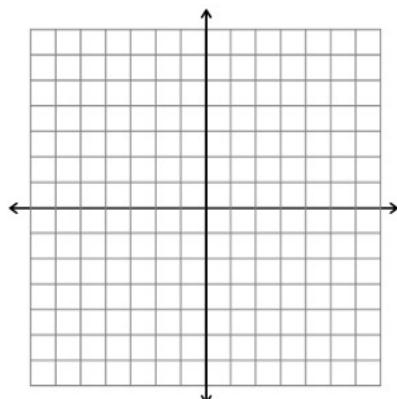
1) $y = \begin{cases} -\frac{1}{4}x - 2 & \text{if } x \leq -4 \\ 3 & \text{if } -4 < x < 3 \\ x - 4 & \text{if } x \geq 3 \end{cases}$



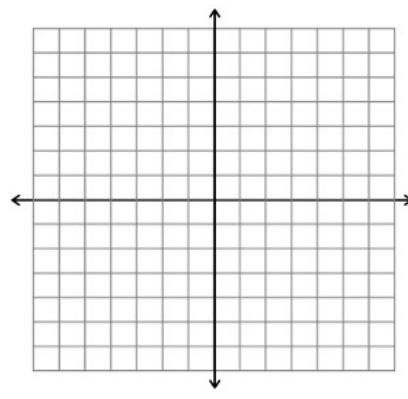
2) $g(x) = \begin{cases} |x + 1| - 2 & \text{if } x < 0 \\ -1 & \text{if } x \geq 0 \end{cases}$



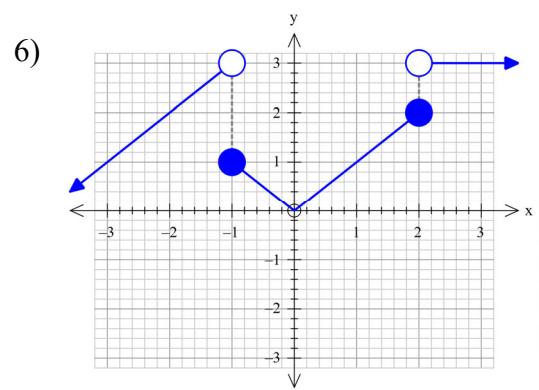
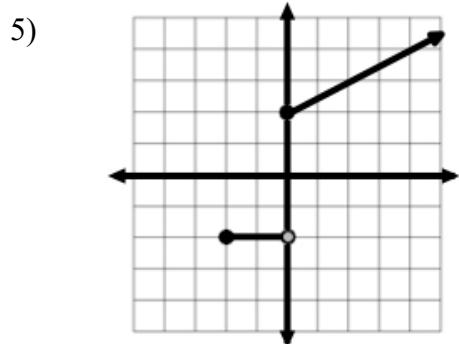
3) $y = \begin{cases} 5 & \text{if } -6 < x \leq -2 \\ 1 & \text{if } -2 < x \leq 2 \\ -3 & \text{if } 2 < x \leq 6 \end{cases}$



4) $h(x) = \begin{cases} |x + 4| - 3 & \text{if } x < -2 \\ 1 & \text{if } -2 \leq x \leq 3 \\ -2x + 5 & \text{if } x > 3 \end{cases}$



For #5 – 6: Write the equations for the piecewise functions shown below.



7) Factor: $x^2 - 9$

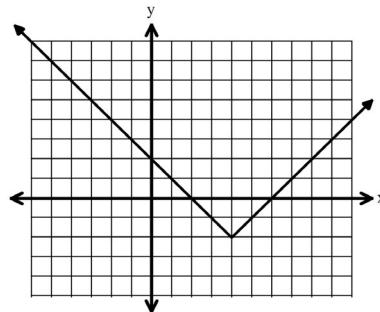
8) Factor: $x^2 - 7x - 30$

9) Factor: $x^2 + 14x + 40$

10) Simplify: $2^3 + 3^2 - 7^0$

11) Which equation is obtained after the translation of the graph up 2 units and left 6 units?

- A. $f(x) = |x - 2|$
- B. $f(x) = |x| - 2$
- C. $f(x) = |x + 2|$
- D. $f(x) = |x| + 2$



For #12 – 13: Your cell phone plan costs \$75/month and gives you unlimited talk, and 500 text messages per month, and no data plan. After 500 text messages, it costs \$.10 per text you send.

12) Write a piecewise function to represent this situation.

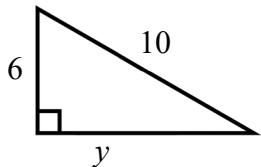
13) How much will it cost to send 750 text messages?

For #14 – 15: You go to the grocery store to buy some Snickers. A bag of Snickers costs \$3.45, but if you buy 4 or more bags, they only cost \$3.00 per bag.

14) Write a piecewise function to represent this situation.

15) How much would it cost to purchase 7 bags of Snickers?

16) Find the missing length:



17) The area of a circle is $144\pi \text{ cm}^2$. Find the radius.

Algebra 2
Ch 1 Practice Test

Name _____

For #1 – 6, solve each equation. No decimal answers!

1) $\frac{3x-5}{2} = \frac{4-7x}{11}$

2) $5 - 2(4x + 1) - 6x = 9x + 7$

3) $\frac{5}{4}b - 2 = 13$

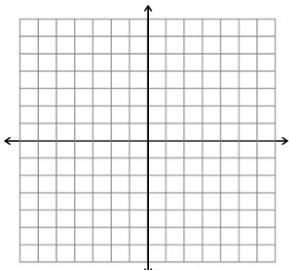
4) $-11x + 2 = -5(2x - 3)$

5) $6 - 2x = -4x + 10$

6) Solve for y : $2x - 3y = -12$

For #7 – 15, for each function, sketch a graph, describe the transformation(s) from the parent function, and identify the domain and range in set notation.

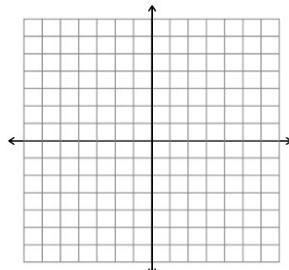
7) $2y = -x + 6$



Transformations:

D:
R:

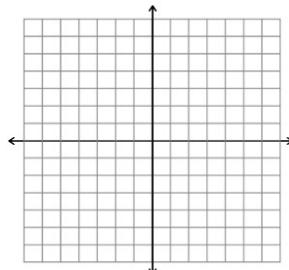
8) $y = 3(x - 1) + 2$



Transformations:

D:
R:

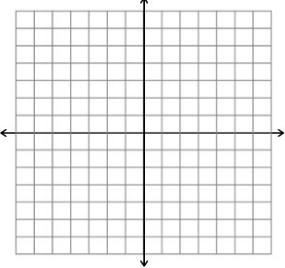
9) $y = \frac{1}{3}|x - 4|$



Transformations:

D:
R:

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

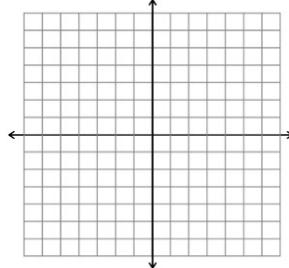


Transformations:

D:

R:

11) $y = |x + 1| - 3$

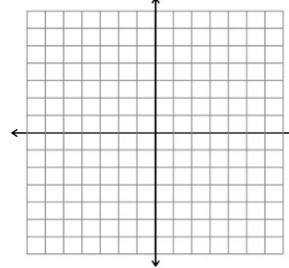


Transformations:

D:

R:

12) $f(x) = -|x| + 2$

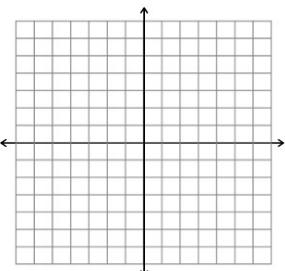


Transformations:

D:

R:

13) $y = -2x$

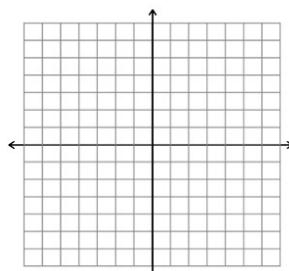


Transformations:

D:

R:

14) $y = -2|x + 1| + 3$

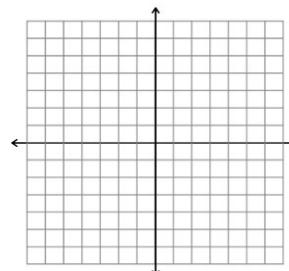


Transformations:

D:

R:

15) $y = -4|x| + 6$



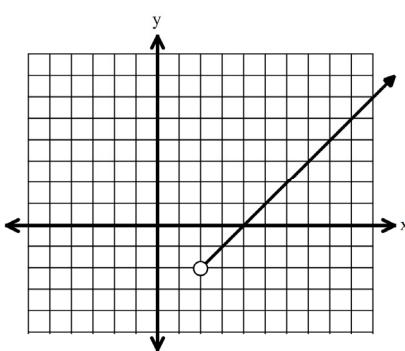
Transformations:

D:

R:

For #16-18 , describe the domain and range in the both interval and set notation.

16)



Set notation

D:

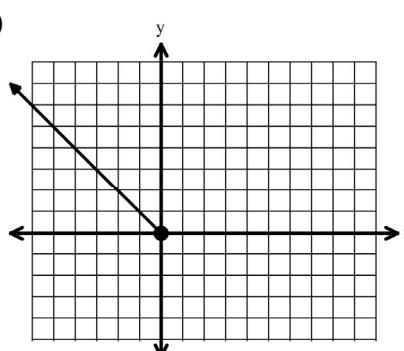
R:

Interval notation

D:

R:

17)



Set notation

D:

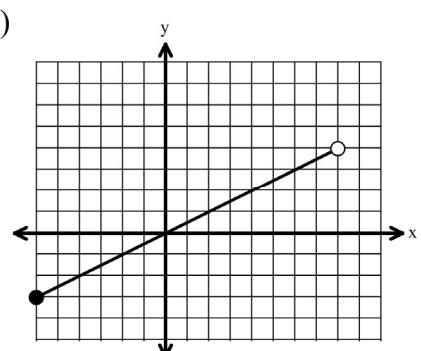
R:

Interval notation

D:

R:

18)



Set notation

D:

R:

Interval notation

D:

R:

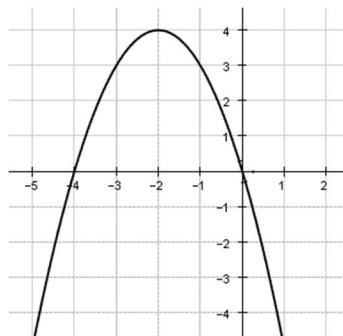
19) Factor: $x^2 - 15x + 14$

20) Factor: $x^2 + 9x + 20$

21) Factor: $x^2 - x - 12$

22) What is the range of the function shown?

- a) $(-\infty, 4]$
- b) $[4, \infty)$
- c) $(-\infty, -2]$
- d) $[-2, \infty)$
- e) $(-\infty, \infty)$



23) Which of the following is NOT an equivalent form of the line represented in the table:

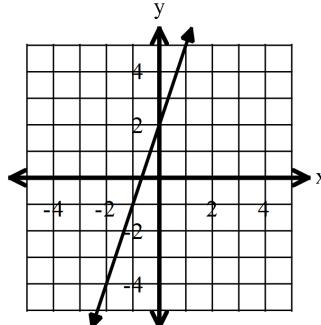
x	y
-2	-4
-1	-1
0	2
1	5

A. $y = 2x + 3$

C. $y = 3(x - 0) + 2$

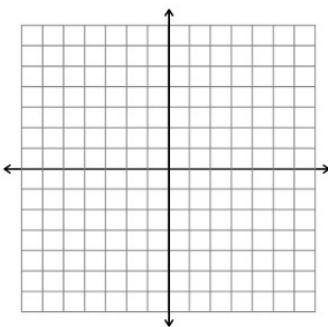
B. $y - 2 = 3(x - 0)$

D.

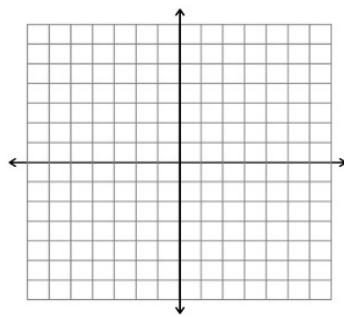


For #24 – 27, graph each piecewise function.

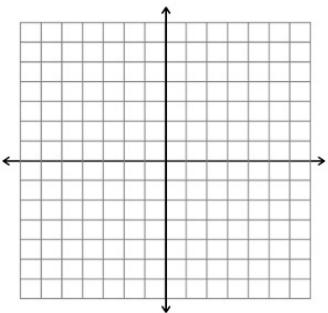
24) $y = \begin{cases} -3x - 6 & \text{if } x \leq -2 \\ 2 & \text{if } -2 < x < 1 \\ |x - 4| + 2 & \text{if } x \geq 1 \end{cases}$



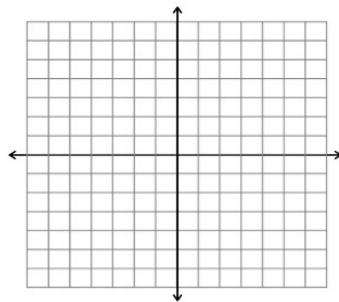
25) $g(x) = \begin{cases} (x + 2) - 4 & \text{if } x < 0 \\ |x - 1| + 2 & \text{if } x \geq 0 \end{cases}$



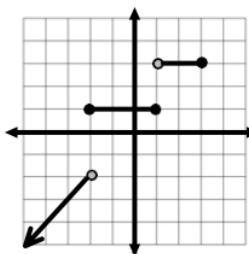
26) $y = \begin{cases} -2 & \text{if } -6 < x \leq -2 \\ 1 & \text{if } -2 < x \leq 2 \\ 3 & \text{if } 2 < x \leq 6 \end{cases}$



27) $h(x) = \begin{cases} |x| - 1 & \text{if } x < 1 \\ 4 & \text{if } 1 \leq x \leq 3 \\ 2x - 3 & \text{if } x > 3 \end{cases}$



28) Write the equations for the piecewise function shown.



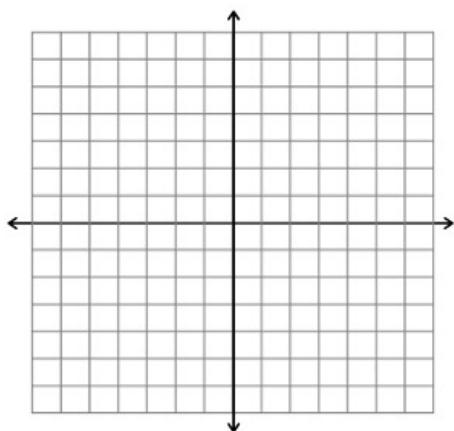
For #29-30, Solve the System of Equations using a method of your choice.

29) $\begin{cases} y = x - 6 \\ 2x - 3y = 14 \end{cases}$

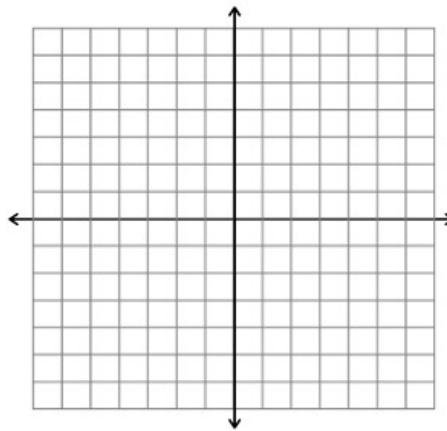
30) $\begin{cases} 7x - 2y = -3 \\ -14x + 4y = 8 \end{cases}$

For #31-32, Solve the System of Inequalities by graphing.

31) $\begin{cases} y < -2x + 4 \\ y < x - 4 \end{cases}$



32) $\begin{cases} x + y \leq 4 \\ y \geq 2x - 4 \end{cases}$



Ch 1 Practice Test Answers

1) $\frac{63}{47}$

2) $-\frac{4}{23}$

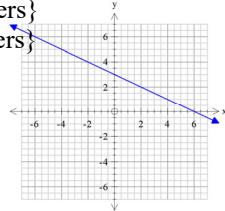
3) 12

4) $x = -13$

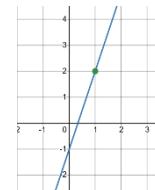
5) $x = 2$

6) $y = \frac{2}{3}x + 4$

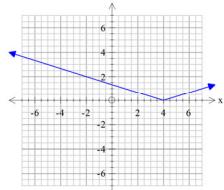
- 7) vertical reflection, up 3, vertical compression
 D: $\{x | x \text{ is all real numbers}\}$
 R: $\{y | y \text{ is all real numbers}\}$



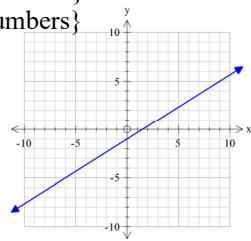
- 8) right 1, up two, stretch by 3
 D: $\{x | x \text{ is all real numbers}\}$
 R: $\{y | y \text{ is all real numbers}\}$



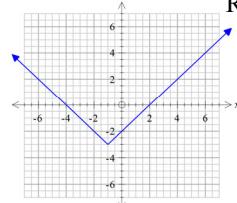
- 9) vertical compression, right 4
 D: $\{x | x \text{ is all real numbers}\}$
 R: $\{y | y \geq 0\}$



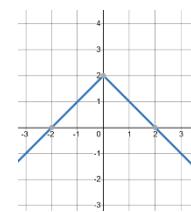
- 10) vertical compression, right 3, up 1
 D: $\{x | x \text{ is all real numbers}\}$
 R: $\{y | y \text{ is all real numbers}\}$



- 11) left 1, down 3
 D: $\{x | x \text{ is all real numbers}\}$
 R: $\{y | y \geq -3\}$

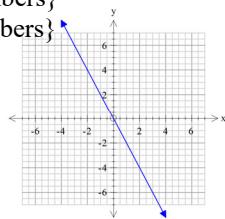


- 12) vertical reflection, up 2
 D: $\{x | x \text{ is all real numbers}\}$
 R: $\{y | y \leq 2\}$



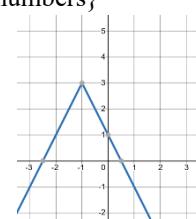
- 13) vertical reflection, vertical stretch

D: $\{x | x \text{ is all real numbers}\}$
 R: $\{y | y \text{ is all real numbers}\}$



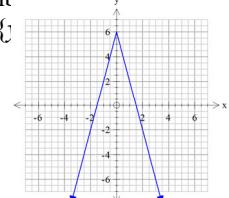
- 14) vertical reflection, vertical stretch, left 1, up 3

D: $\{x | x \text{ is all real numbers}\}$
 R: $\{y | y \leq 3\}$



- 15) vertical reflection, vertical stretch, up 6

D: $\{x | x \text{ is all real numbers}\}$
 R: $\{y | y \geq 6\}$



- 16) Set Notation

D: $\{x | x > 2\}$ R: $\{y | y > -2\}$

Interval Notation

D: $(2, \infty)$ R: $(-2, \infty)$

- 17) Set Notation

D: $\{x | x \leq 0\}$ R: $\{y | y \geq 0\}$

Interval Notation

D: $(-\infty, 0]$ R: $[0, \infty)$

- 18) Set Notation

D: $\{x | -6 \leq x < 8\}$ R: $\{y | -3 \leq y < 4\}$

Interval Notation

D: $[-6, 8)$ R: $[-3, 4)$

19) $(x - 14)(x - 1)$

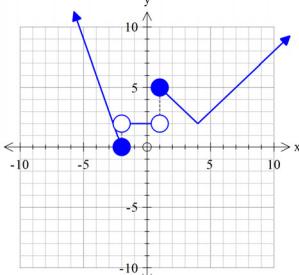
20) $(x + 5)(x + 4)$

21) $(x - 4)(x + 3)$

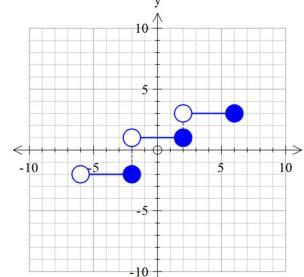
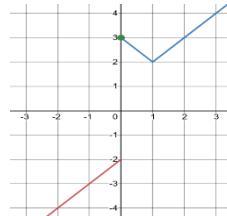
22) A

23) A

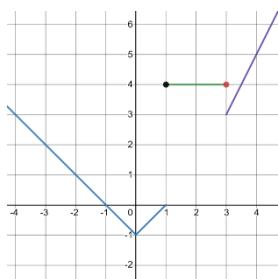
24)



25)



27)

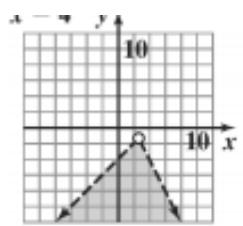


$$28) y = \begin{cases} x & \text{if } x < -2 \\ 1 & \text{if } -2 \leq x \leq 1 \\ 3 & \text{if } x > 1 \end{cases}$$

29) (4, -2)

30) No Solution

31)



32)

