

Honors Algebra 2 2018 - 2019

B for Behavior

E for Engagement

A for Academic Preparedness

R for Respect

S for Safety



Honors Algebra 2 is a rigorous course that requires the use of Algebra 1 skills. The summer work is designed to maintain and reinforce these prerequisite skills so as to prepare you for the upcoming school year. If you need help with a topic, use the online Algebra 1 textbook as a resource (the link is on our Google Classroom).

- Complete the summer packet in **pencil only**
- Show all necessary work
- Due on the first day of class
- A **test** on the summer packet **will be given on the first day of class**

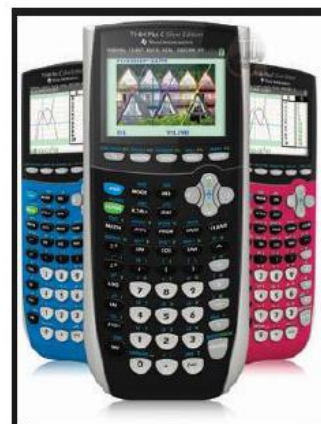
Please join Google Classroom using the code

3skgnr5

Google Classroom will be used for future postings and information throughout the summer.

For the 2018-2019 school year, you will be required to bring the following supplies to class every day

- TI-84 Plus or TI-84 CE graphing calculator
- $1\frac{1}{2}$ inch 3-ring binder with 8 dividers
- Red pen
- Mechanical pencils
- Loose leaf paper
- Colored pencils



Pencil only!**Show all necessary work to receive credit.****Due: First day of class.****Chapter 1: Solving Linear Equations**

1) $6a - 10 = 3a + 17$

1) $a = \underline{\hspace{2cm}}$

2) $5w + 4 - 7w = 12$

2) $w = \underline{\hspace{2cm}}$

3) $\frac{3}{4}(12c - 4) = 15c + 15$

3) $c = \underline{\hspace{2cm}}$

4) $11(4p + 4) - 4p = 4(7p - 7)$

4) $p = \underline{\hspace{2cm}}$

5) $\frac{3}{5}e - 6 = -\frac{2}{5}(e - 10) - 7$

5) $e = \underline{\hspace{2cm}}$

Solving Proportions

1) Solve: $\frac{3}{x} = \frac{4}{9}$

1) $x = \underline{\hspace{2cm}}$

2) Solve: $\frac{3}{x-1} = \frac{4}{x+1}$

2) $x = \underline{\hspace{2cm}}$

Determine if each equation has no solution or an infinite number of solutions.

1) $4(x + 2) = 2(2x + 3) + 2$ 1) _____

2) $6m + 4 - 4m = \frac{2}{3}(3m - 9)$ 2) _____

Rewriting Equations and Formulas

$$M = P(1.02)^t$$

1) The formula above gives the amount of money M earned after P dollars is invested for t years. Which of the following gives P in terms of M and t ?

A) $P = M - (1.02)^t$ B) $P = \frac{M}{(1.02)^t}$ C) $P = M + (1.02)^t$ D) $P = M(1.02)^t$

$$a = 1,052 + 1.08t$$

2) The speed of a sound wave in air depends on the air temperature. The formula above shows the relationship between a , the speed of a sound wave, in feet per second, and t , the air temperature, in degrees Fahrenheit.

Which of the following expresses the air temperature in terms of the speed of a sound wave?

A) $t = \frac{a - 1,052}{1.08}$ B) $t = \frac{a + 1,052}{1.08}$ C) $t = \frac{1,052 - a}{1.08}$ D) $t = \frac{1.08}{a + 1,052}$

$$Ax + By = C$$

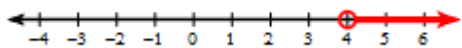
3) The equation above represent the standard form of a line. Which of the following expresses y in terms of A , B , C , and x ?

A) $y = C - Ax - B$ B) $y = \frac{C - Ax}{B}$ C) $y = \frac{C - B}{Ax}$ D) $y = \frac{C + Ax}{B}$

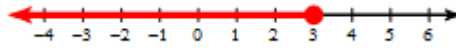
Chapter 2: Solving and Graphing Inequalities

Write an inequality that represents the graph.

1) _____



2) _____



Solve each inequality.

3) $\frac{x}{2} + 4 > 1$

3) _____

4) $6x - 5 < 2x + 11$

4) _____

5) What is the solution to the inequality $-2x + 25 < 11$?

- A) $x < 7$
- B) $x > 7$
- C) $x > -18$
- D) $x < -18$

Determine if each inequality has no solution or an infinite number of solutions.

1) $\frac{1}{2}(6x + 8) \geq 3(x + 5)$

1) _____

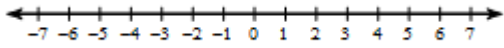
2) $4x + 3 < 6x - 2x + 8$

2) _____

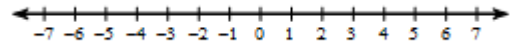
Compound Inequalities

Graph the compound inequality.

1) $x < -3$ or $x \geq 4$

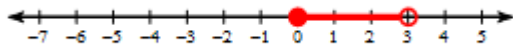


2) $-1 \leq x \leq 3$



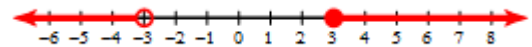
Choose the compound inequality represented by the graph.

3)



- A) $0 < x \leq 3$
- B) $0 < x < 3$
- C) $0 \leq x < 3$
- D) $x \leq 0$ or $x > 3$

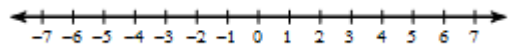
4)



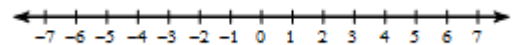
- A) $x < -3$ or $x \geq 3$
- B) $x > -3$ or $x \leq 3$
- C) $-3 \leq x < 3$
- D) $-3 < x \leq 3$

Solve the compound inequality and graph the solution.

5) $2x + 1 < -11$ or $3x - 2 \geq 1$



6) $6 \leq x + 5 \leq 11$



Chapter 3: Graphing Linear Equations

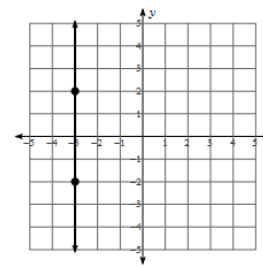
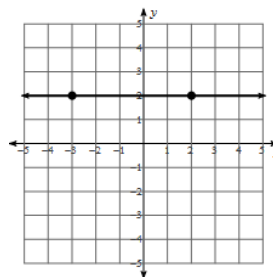
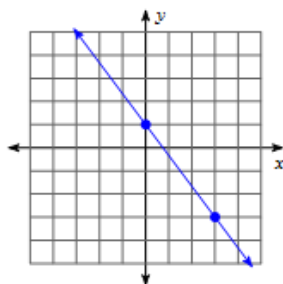
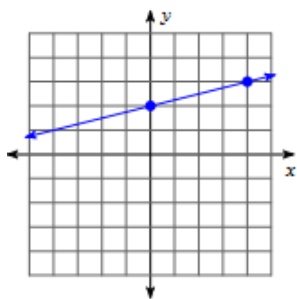
Give the slope of each line.

1) $m =$ _____

2) $m =$ _____

3) $m =$ _____

4) $m =$ _____



5a) What is the x -intercept of the graph of the equation $2x + 6y = 6$?

- A) 1
- B) 2
- C) 3
- D) 6

5b) What is the y -intercept of the graph of the equation $2x + 6y = 6$?

- A) 1
- B) 2
- C) 3
- D) 6

6) What is the x -intercept of the line with equation $y = 2x + 6$?

6) _____

7) Find the slope of the line passing through the given points.

a) $(-4, 1)$ and $(2, 6)$

a) _____

b) $(2, 4)$ and $(-4, 4)$

b) _____

c) $(1, -4)$ and $(-2, -7)$

c) _____

d) $(6, 3)$ and $(6, 8)$

d) _____

8) Which of the following is the slope-intercept form of $3x + 4y = 8$?

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

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

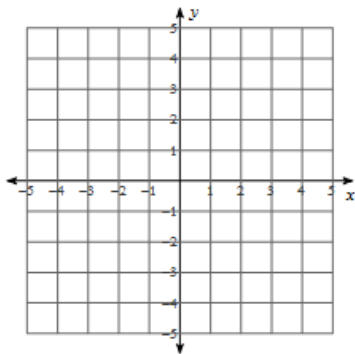
C) $y = \frac{4}{3}x + 2$

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

Graph each line using the slope and y -intercept.

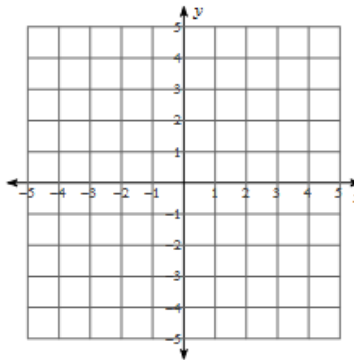
9) $y = -4x + 3$

slope _____ y -int _____



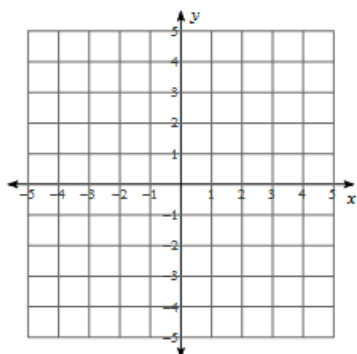
10) $y = \frac{1}{2}x - 5$

slope _____ y -int _____

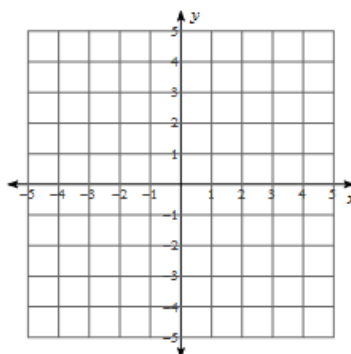


Graph each horizontal or vertical line.

11) $y = 3$



12) $x = 3$



13) The total amount of water, w , in gallons, left in a tank can be modeled by the equation $w = 300 - 5t$, where t is the number of hours since the tank started leaking. Which of the following is the best interpretation of the number 5 in the equation?

- A) The tank is empty after 5 hours
- B) The tank loses 5 gallons of water each hour
- C) The tank continues to lose water until 5 gallons are left
- D) Each hour, the tank loses 5 less gallons of water than it did in the previous hour

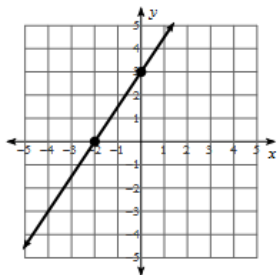
$$a = 18t + 15$$

14) A bank customer made an initial deposit into a savings account, and then deposited a fixed amount each week into the account. The equation above models the amount, a , in dollars after t weeks. What was the dollar amount of the initial deposit? \$ _____

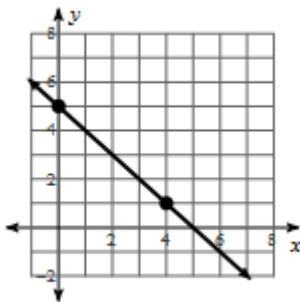
Chapter 4: Writing Linear Equations

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

1) _____

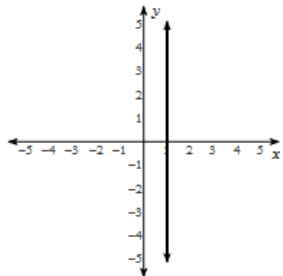


2) _____

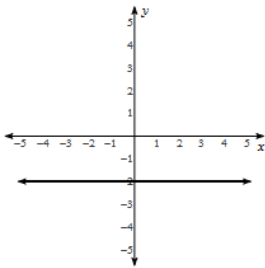


Write the equation of each line.

3) _____



4) _____



Write the **slope-intercept form** of the equation with the given characteristics.

5) slope = $\frac{1}{4}$; passes through (0, 2)

5) _____

6) What is the equation of the line that has a slope of 4 and passes through the point (3, -10)?

- A) $y = 4x - 22$
- B) $y = 4x + 22$
- C) $y = 4x - 43$
- D) $y = 4x + 43$

Write the **slope-intercept form** of the equation with the given characteristics.

7) passes through (2, 1) and (3, -5)

7) _____

8) parallel to $y = -3x + 5$; passes through (-4, 6)

8) _____

9) perpendicular to $y = -\frac{1}{2}x - 8$; passes through (0, 6)

9) _____

10) a **horizontal** line that passes through (3, -5)

10) _____

11) The table below shows the distance covered by a spaceship in outer space. Write an equation in slope-intercept form that represents the distance traveled as a function of time.

11) _____

Time (seconds)	1	4	7	10	13
Distance (miles)	5	20	35	50	65

12) Which point-slope equation represents a line that passes through (5, -3) with slope 6?

- A) $y - 5 = 6(x + 3)$
- B) $y + 5 = 6(x - 3)$
- C) $y + 3 = 6(x - 5)$
- D) $y - 3 = 6(x + 5)$

13) Rewrite the equation below in **standard form** $Ax + By = C$

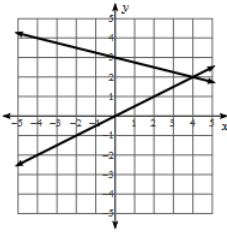
13) _____

$$y = -\frac{2}{3}x + 4 \quad (A, B, \text{ and } C \text{ are integers and } A > 0)$$

Chapter 5: Solving Systems of Equations

1) Give the (x, y) solution to the system graphed below.

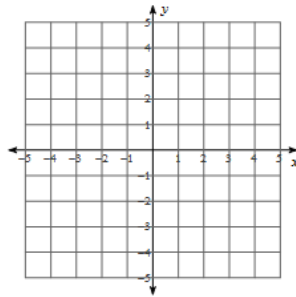
1) _____



2) Find the (x, y) solution to the system of equations by graphing.

2) _____

$$\begin{cases} y = 3x - 1 \\ y = -2x + 4 \end{cases}$$



3) Which of the following ordered pairs (x, y) is a solution of the system below?

$$\begin{cases} 3x + 5y = 10 \\ -x + y = 2 \end{cases}$$

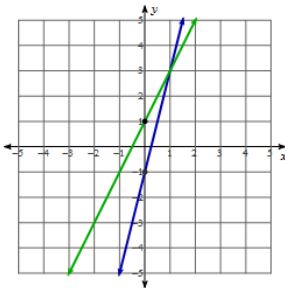
A) $(-2, 0)$

B) $(0, 2)$

C) $(2, 4)$

D) $(4, 6)$

4) Write a system of equations for the system graphed below.



{ _____

Find the (x, y) solution to the system of equations.

5)
$$\begin{cases} x = 3y \\ 2x + y = 14 \end{cases}$$

5) _____

$$6) \begin{cases} 2x + 4y = 20 \\ y = x + 2 \end{cases}$$

6) _____

- 7) An online movie club has an initiation fee of \$10 plus \$4 per movie rented.
 Another club has an initiation fee of \$20 plus \$2 per movie rented.
 The equations below model the memberships for the two clubs.

$$\begin{cases} c = 4m + 10 \\ c = 2m + 20 \end{cases}$$

- a) After how many movies will the memberships cost the same amount?

a) _____

- b) What is that cost?

b) _____

- 8) Solve the system.

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

8) _____

- 9) What is the solution to the system solved below?

$$\begin{cases} -4x + 2y = 5 \\ 4x - 2y = 1 \end{cases}$$

$$0 = 6$$

- A) (0, 6)
 B) (6, 0)
 C) No solution
 D) Infinitely many solutions

- 10) Find the (x, y) solution to the system of equations.

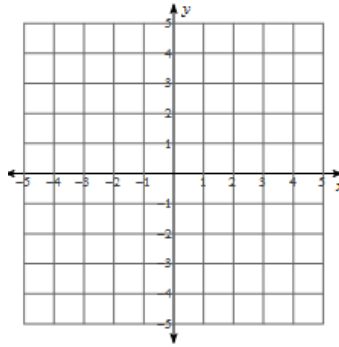
$$\begin{cases} 3x + y = 10 \\ 2x + 2y = 8 \end{cases}$$

10) _____

Graphing Linear Inequalities

1) Graph the linear inequality. Use a color pencil to shade the solution.

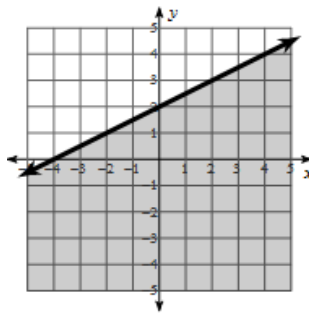
$$y \leq \frac{1}{3}x - 4$$



2) Is $(4,5)$ a solution of the inequality $y > \frac{1}{2}x + 3$? Show your work!

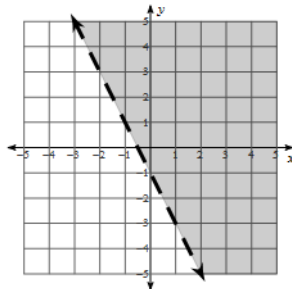
3) Which one of the following points is **not** a solution of the inequality graphed below?

- A) $(1, 1)$
- B) $(2, -1)$
- C) $(2, 3)$
- D) $(-1, 4)$



4) Which of the following linear inequalities is graphed below?

- A) $y < -2x - 1$
- B) $y \leq -2x - 1$
- C) $y > -2x - 1$
- D) $y \geq -2x - 1$



Systems of Linear Inequalities

1) Is $(2,3)$ a solution of the system of linear inequalities below? Show your work!

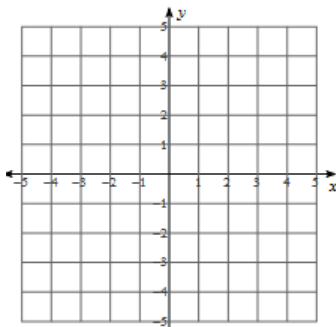
$$y \geq 3x - 4$$

$$y < -2x + 8$$

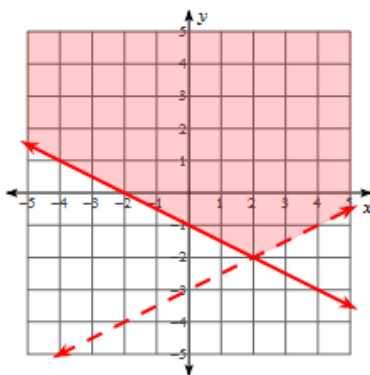
2) Graph the system of linear inequalities. Use 2 different color pencils to shade. Clearly label the solution region.

$$y \geq -2x + 1$$

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



3) Choose the system of inequalities graphed below.



A) $y \leq -\frac{1}{2}x - 1$

B) $y \geq -\frac{1}{2}x - 1$

C) $y \leq -\frac{1}{2}x - 1$

D) $y \geq -\frac{1}{2}x - 1$

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

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

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

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

Chapter 6.1: Exponents.

1) The product of $6x^3y^3$ and $2x^2y$ is

- A) $3xy^2$ B) $8x^5y^4$ C) $12x^5y^4$ D) $12x^6y^3$

2) $4^{-2} =$

- A) $\frac{1}{16}$ B) -16 C) -8 D) $\frac{1}{8}$

3) $\frac{x}{x^4} =$

- A) $-x^3$ B) $\frac{1}{x^3}$ C) $\frac{x}{-3}$ D) x^3

4) For any nonzero value of x , $(x^4)^{-2} =$

- A) x^8 B) $\frac{1}{x^8}$ C) x^2 D) $-8x$

5) Expressed in simplest form, $\frac{12a^3c}{4ac}$ is equivalent to

- A) $8a^2$
B) $3a^2$
C) $3a^2c$
D) $3a^3c$

6) Which expression is equivalent to $\frac{2x^6 - 18x^4 + 2x^2}{2x^2}$?

- A) $x^3 - 9x^2$ B) $x^4 - 9x^2$ C) $x^3 - 9x^2 + 1$ D) $x^4 - 9x^2 + 1$

7) $(2x^4)^3$

- A) $8x^{12}$ B) $8x^7$ C) $6x^7$ D) $6x^{12}$

8) x^5y^{-2}

- A) $\frac{y^2}{x^5}$ B) $\frac{x^5}{y^2}$ C) $\frac{1}{x^5y^2}$ D) x^5y^2

9) $3^0 =$

- A) 0 B) 1 C) 3 D) $\frac{1}{3}$

Chapter 7: Polynomials

1) Write $3x - 2x^2 + 4 + x^3$ in descending order for the variable x . 1) _____

$$(3x^2 - 5x + 2) + (5x^2 - 2x - 6)$$

2) What is the sum of the two polynomials above?

- A) $8x^2 - 7x - 4$
- B) $8x^2 + 7x - 4$
- C) $8x^4 - 7x^2 - 4$
- D) $8x^4 + 7x^2 - 4$

$$(x^2y - 3y^2 + 5xy^2) - (-x^2y + 3xy^2 - 3y^2)$$

3) Which of the following is equivalent to the expression above?

- A) $4x^2y^2$
- B) $8xy^2 - 6y^2$
- C) $2x^2y + 2xy^2$
- D) $2x^2y + 8xy^2 - 6y^2$

4) Find each product.

a) $3x(5x^2 - 4x + 1)$ a) _____

b) $x^2y^2(2x^3y^4 + 7xy^2)$ b) _____

5) Find each product.

a) $(x + 3)(x + 4)$ a) _____

b) $(x - 7)(x - 1)$ b) _____

c) $(x + 6)(x - 6)$ c) _____

d) $(2x + 3)(2x - 3)$ d) _____

e) $(x + 4)^2$ e) _____

6) Which trinomial is equivalent to $(3x-1)(x+4)$?

- A) $3x^2 + 11x - 4$
- B) $3x^2 - 11x + 4$
- C) $3x^2 + 13x - 4$
- D) $3x^2 + 11x + 4$

Factoring a Polynomial

1) $x^2 + 7x + 10 = (x + \underline{\quad})(x + \underline{\quad})$

2) $x^2 + 6x + 9 = (x + \underline{\quad})^2$

3) $x^2 - 15x + 50 = (x - \underline{\quad})(x - \underline{\quad})$

3) The polynomial $9x^2 + 24x + 16$ factors to $(ax + b)^2$. What are the values of a and b ?

$a = \underline{\quad}$ $b = \underline{\quad}$

Factor the polynomial.

4) $x^2 + 12x + 20$

4) _____

5) $x^2 - 8x + 15$

5) _____

6) $x^2 + 2x - 3$

6) _____

7) $x^2 - 64$

7) _____

8) $x^2 - y^2$

8) _____

9) $25x^2 - 49$

9) _____

Factor as the square of a binomial.

10) $x^2 - 8x + 16$

10) _____

11) $25x^2 + 30x + 9$

11) _____

Factor using the GCF.

12) $4x + 20$

12) _____

13) $2x^2 - 6x$

13) _____

14) $x^2y^5 + x^4y$

14) _____

Factor completely.

15) $2x^2 - 50$

15) _____

16) $3x^2 + 21x + 30$

16) _____

17) Which represents the complete factorization of $2x^2 + 12x$?

- A) $x(2x + 12)$
- B) $2(x^2 + 6x)$
- C) $2x(x + 6)$
- D) $2x^2(1 + 12x)$

18) Which represents the complete factorization of $x^2 + 5x - 14$?

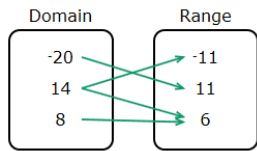
- A) $(x - 2)(x + 7)$
- B) $(x + 2)(x - 7)$
- C) $(x - 1)(x + 14)$
- D) $(x + 1)(x - 14)$

19) Which binomial is a factor of $x^2 + 5x - 6$?

- A) $x + 6$
- B) $x + 2$
- C) $x + 3$
- D) $x + 1$

Chapter 3.1 – 3.3: Functions

1) Determine whether each relation represents a function. If it is not, circle elements that fail



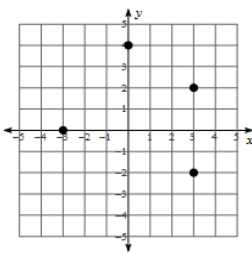
Domain	Range
14	3
17	3
-17	20

- yes
 no

- yes
 no

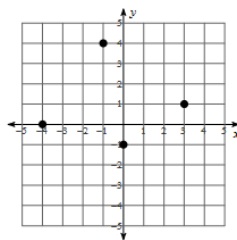
Use the Vertical Line Test (VLT) to determine if each graph represents a function.

2)



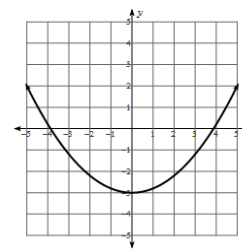
- Function
 Not a Function

3)



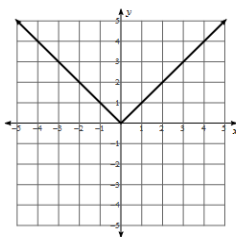
- Function
 Not a Function

4)



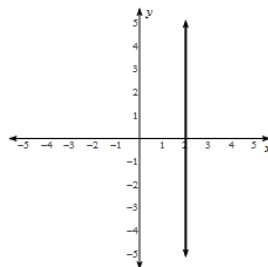
- Function
 Not a Function

5)



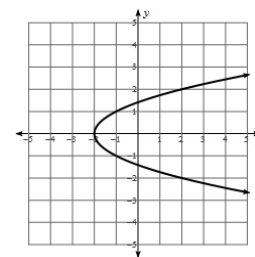
- Function
 Not a Function

6)



- Function
 Not a Function

7)



- Function
 Not a Function

8) What number(s) can be placed in the empty cell so that the table of values satisfies the definition of a function?

Select **all** that apply.

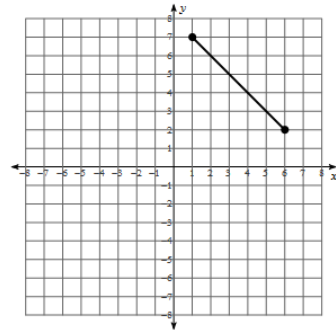
- A. -5
 B. -1
 C. 0
 D. 2
 E. 11
 F. 17

Input	-13	20	0	-4	11	-1	17	
Output	-15	-11	-9	-2	-1	5	5	13

Function f is graphed at the right.

9) Find $f(5)$.

10) For what value of x does $f(x) = 6$?



The table represents a function f .

11) $f(-1) =$ _____

12) For what value of x does $f(x) = 2$?

13a) What is the x -intercept of the function? _____

b) What is the y -intercept of the function? _____

c) Write an equation in slope-intercept form to represent the function. _____

x	$f(x)$
-1	-2
0	-1
1	2
2	0

14) If f is a function defined by $f(x) = 2x - 5$, for what value of x does $f(x) = 3$?

14) _____

15) Let $f(x) = 3x + 2$ and $g(x) = x + 4$. Find the following:

a) $f(3)$

a) _____

b) $g(-1)$

b) _____

c) $2f(x)$

c) _____

d) $f(x) + g(x)$

d) _____

e) $f(x) - g(x)$

e) _____

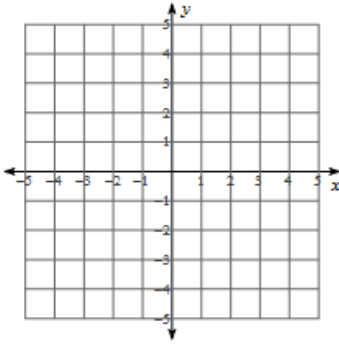
f) $f(x) \cdot g(x)$

f) _____

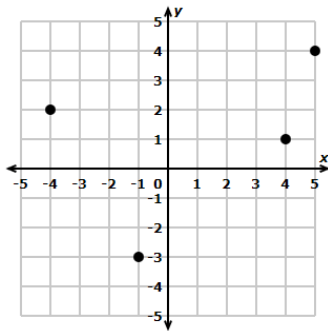
16) The function f is defined by $f(x) = 2x + a$, where a is a constant. If $f(1) = 7$, what is the value of a ?

- A) 5
- B) 7
- C) 8
- D) 9

17) Graph the function $f(x) = 2x - 4$ using the slope and the y -intercept.



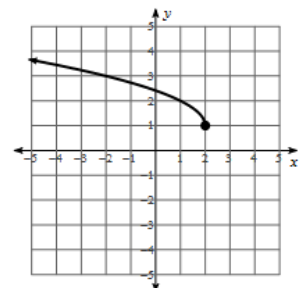
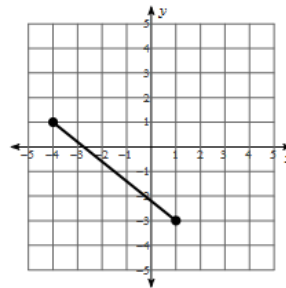
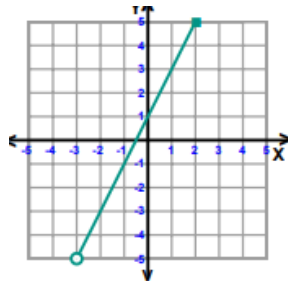
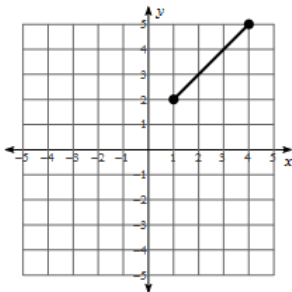
18) Give the domain and range of the function.



Domain _____

Range _____

19) Give the domain and range of each function.



Domain $___ \leq x \leq ___$

Domain $___ < x \leq ___$

Domain $___ \leq x \leq ___$

Domain $x \leq ___$

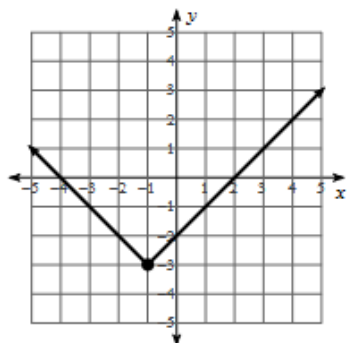
Range $___ \leq y \leq ___$

Range $___ < f(x) \leq ___$

Range $___ \leq y \leq ___$

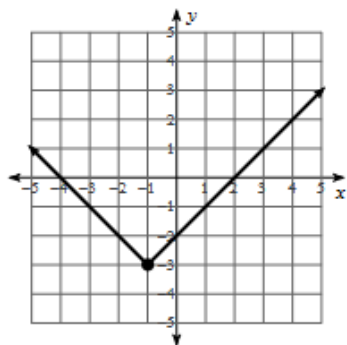
Range $y \geq ___$

20) What is the domain of the function graphed below?



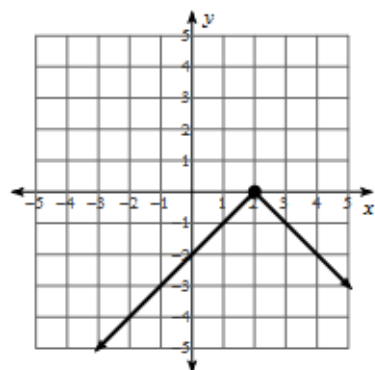
- A) $x \geq -1$
- B) $x \geq -3$
- C) $x \leq -1$
- D) all real numbers

21) What is the range of the function graphed below?



- A) $y \geq -1$
- B) $y \geq -3$
- C) $y \leq -3$
- D) all real numbers

22) What is the range of the function graphed below?



- A) $y \leq 2$
- B) $y \leq 0$
- C) $y \geq 0$
- D) all real numbers