ALGEBRA 2 **SUMMER PACKET** **SY: 2020-2021**

Name: _____

Directions: Write the correct mathematical terms beside the number.

_____**1.** It is a relation in which each element of the domain is paired with exactly one element of the range.

_____**2.** It is a function/graph only consists of certain distinct points – points that can be counted or listed.

_____**3.** All the y-coordinates in the function's ordered pairs is commonly called _____.

_____**4.** All the x-coordinates in the function's ordered pairs is commonly called _____.

_____**5.** This occurs when our graph "jumps" points which makes it not continuous, but has possible decimal values, which makes is not discrete. This is called _____.

_____**6.** It is a function/graph consists of all points within a given interval (including up to infinity).

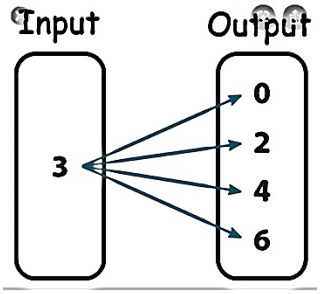
Directions: Determine if the following relations are functions. Write **F** if it is function and **NF** if not. Then state the domain and range.

7-9.

Functions:_____

Domain:_____

Range:_____

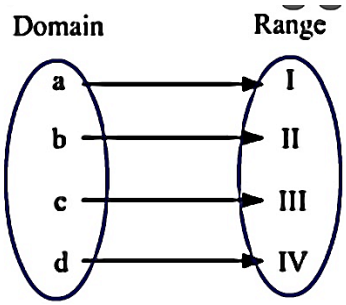


10-12.

Functions:_____

Domain:_____

Range:_____



13-15.

Functions:_____

Domain:_____

Range:_____

ordered pair
(-2,1)
(-1,4)
(0,7)
(1,10)
(2,13)

16-18.

Functions:_____

Domain:_____

Range:_____

x	*y*
–4	–1
–2	4
3	–3
3	–4

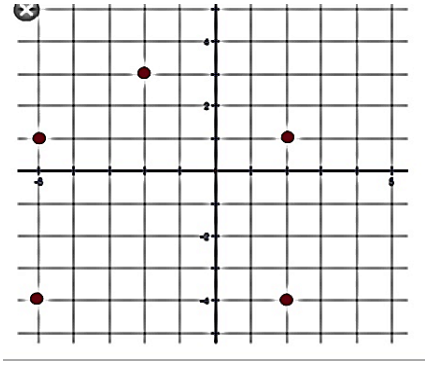
Directions: Determine if the following relations are discrete, continuous or neither. Then state the domain and range.

19-21.

Discrete, Continuous or Neither:_____

Domain:_____

Range:_____

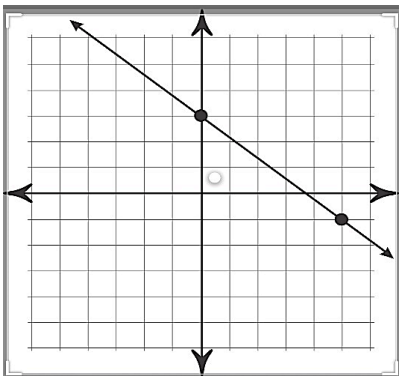


22-24.

Discrete, Continuous or Neither:_____

Domain:_____

Range:_____

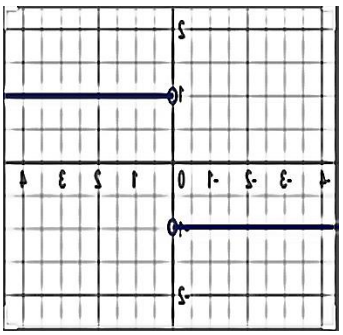


25-27.

Discrete, Continuous or Neither:_____

Domain:_____

Range:_____



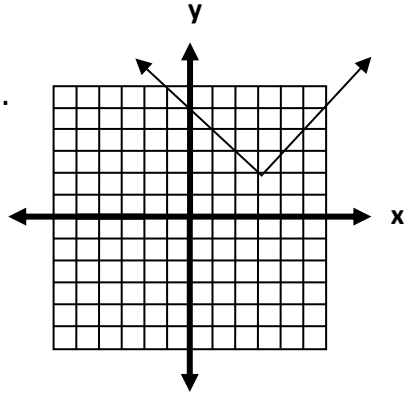
Click this link to see examples

https://www.slideserve.com/juliet-wise/1-3-transforming-functions/?utm_source=slideserve&utm_medium=website&utm_campaign=auto+related+load

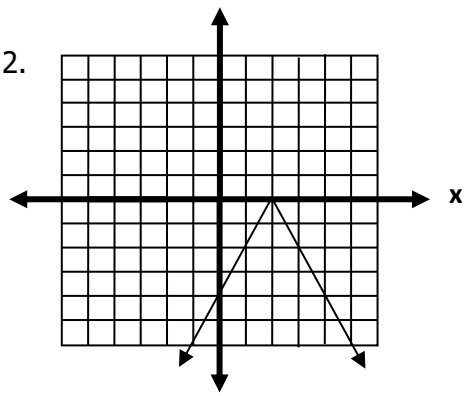
https://www.youtube.com/watch?v=2KsrisWirZs

Given the absolute value graphs, determine the slope, axis of symmetry and vertex.

1.



2.

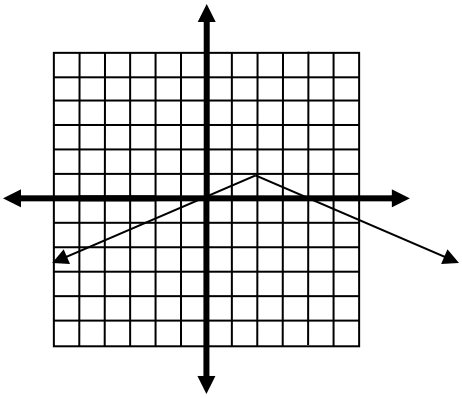


Vertex:_____

Axis of symmetry: _____

Slope:_____

3.

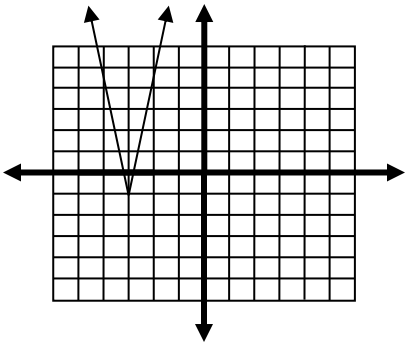


Vertex:_____

Axis of symmetry: _____

Slope:_____

4.



Vertex:_____

Axis of symmetry: _____

Slope:_____

Vertex:_____

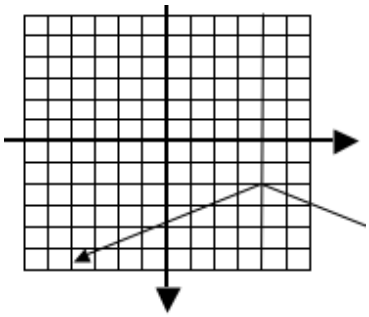
Axis of symmetry: _____

Slope:_____

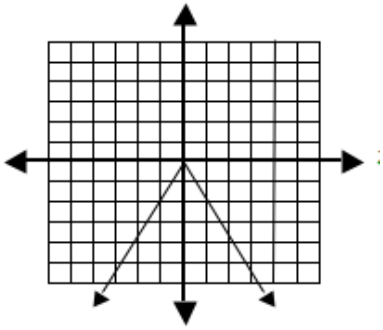
<u>Given the absolute value graphs, determine the vertex, axis of symmetry and slope.</u>

Write the **equation** for the following absolute value functions….

a)



b)



Vertex:_____

Axis of symmetry: _____

Slope:_____

Equations:_____

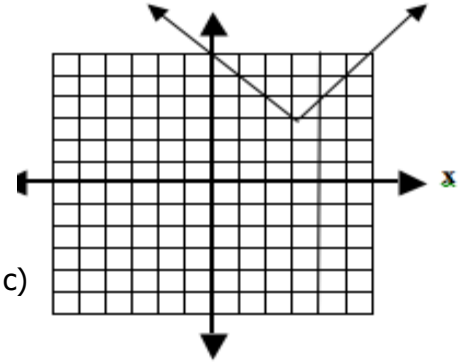
Vertex:_____

Axis of symmetry: _____

Slope:_____

Equations:_____

c)



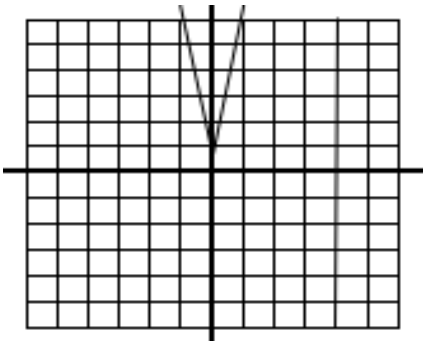
Vertex:_____

Axis of symmetry: _____

Slope:_____

Equations:_____

d)



Vertex:_____

Axis of symmetry: _____

Slope:_____

Equations:_____

Solve the missing variable. Box your final answer.

1) Solve $x + 7 = 29$

2) Solve $8 = a - 32$.

3) Solve $\frac{3}{4} + m = -12$

4) Solve $6x = -90$

5) Solve $\frac{2x}{} = 8$

6) Solve $4x - 3 = 29$

7) Solve $7x + 12 = 13x - 21$.

8) Solve $3(2x - 1) = 4(x + 5)$.

Directions: Complete the table by writing the GCF (Greatest Common Factor) and simplest form.

Equations	GCF	Simplest Form
1. $x^2 + 5x$		
2. $4x^2 + 20x$		
3. $6x + 30$		
4. $x^4 + 13x$		
5. $14x^3 + 28$		
6. $2x^2 + 10x$		
7. $18x^2 + 45$		
8. $16x + 30$		
9. $5x^4 + 50x$		
10. $x^3 + 28x$		

Objectives: Determine the functions and not functions.

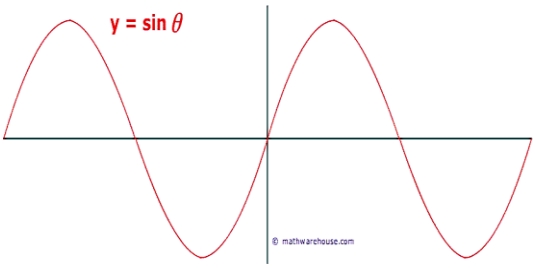
Directions: Write F for functions and NF for relations that are not functions.

$\{(0, 0), (1, 2), (1, 5), (3, 4)\}$ ☐

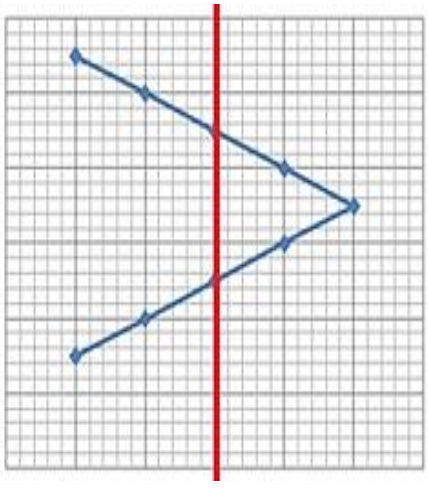
$\{(2, -1), (2, 0), (2, 1), (2, 2)\}$

x	y
1	5
2	6
1	7
2	8

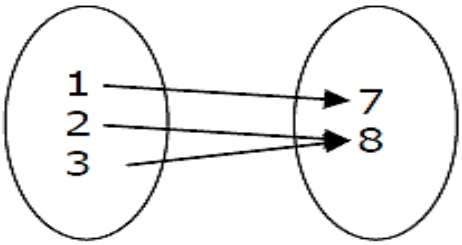
☐



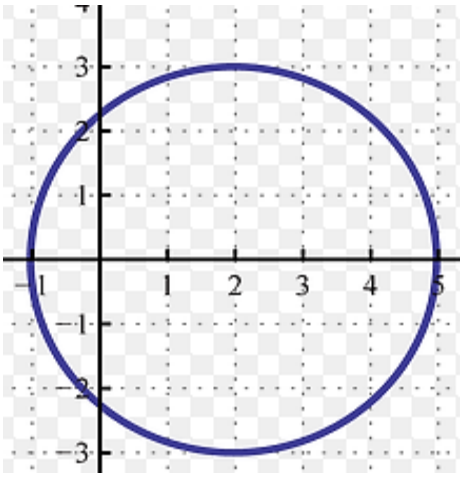
☐

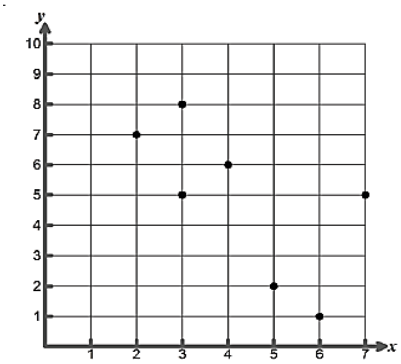


☐



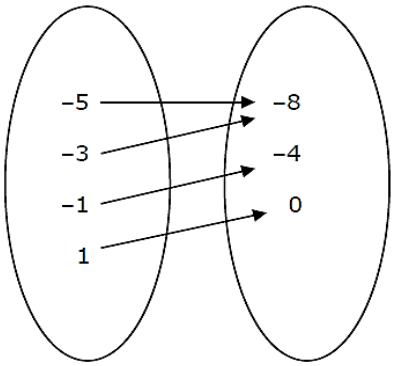
☐

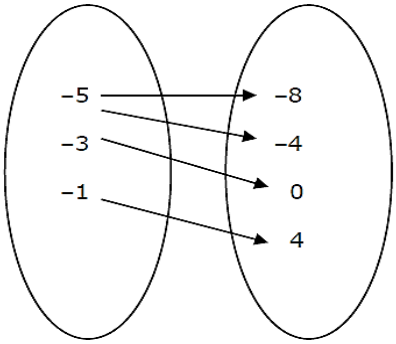




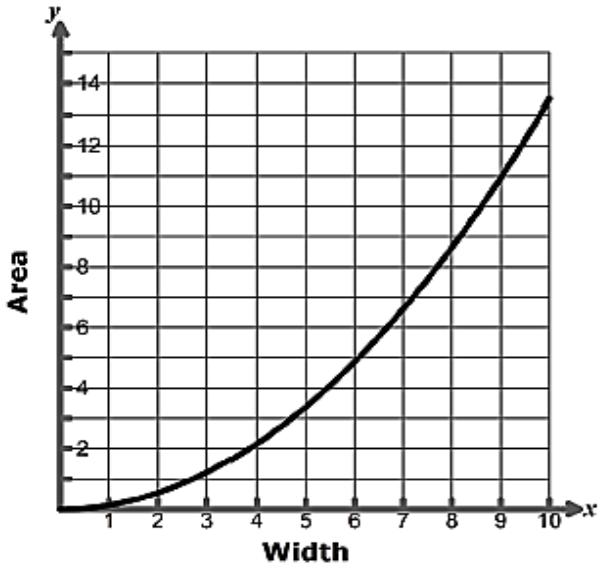
The population in a certain town is listed in the table. The table shows the population of the town every 20 years starting at 1950.

Year	Population
1950	2650
1970	1625
1990	1827
2010	1258





x	y
-2	3
-1	5
0	7
1	9
2	1



MEMPHIS ACADEMY OF SCIENCE AND ENGINEERING **ALGEBRA II** **SUMMER PACKET**

Name:_____ **Date:** _____

I. Directions : Read each question carefully. Write the letter of the correct answer on the blank.

_____1. Which of the following equations shows exponential growth?

A. $y = 220(1 + 0.3)^x$

B. $y = 220(1 - 0.3)^x$

C. $y = 220(0.85)^x$

D. $y = 220(1 - 0.002)^x$

_____2. Which of the following is a formula in solving exponential growth?

A. $A(t) = a(1 - r)^t$

B. $A(t) = a(1 + r)^t$

C. $A(t) = a(r)^{t-1}$

D. $A(t) = a(1r)^{t+1}$

_____3. In $y = a(b)^x$, the condition that a function shows exponential decay ***b*** must be _____.

A. no value

B. constant

C. less than 1

D. more than 1

_____4. Given the equation ,

y = $15(1.15)^x,\ find\ the\ y - intercept.$

A. 1 B. 1.15

C. 0. 15 D. 15

_____5. Which of the following statement is **correct** about exponential growth and exponential decay?

A. $.b\ must\ always\ more\ than\ 1\ in\ both$

B. $b\ is\ less\ than\ one\ when\ decay\ occurs\ and\ more\ than\ one\ when\ growth$ occurs

C. *b is constant*

D. *b is sometimes negative value and never be positive value*

_____6.This is the set of all points in a plane that are a distance *r* from a given point.

A. center B. circle
C. radius D. ellipse

_____7. This is the method used to change an equation of a circle into a standard form.

A. distance formula B. center
C. vertex D. complete the square

_____8. This is the distance *r* from the center of a circle to a point on the circle.

A. center B. circle
C. radius D. ellipse

_____9. All points on a circle are equidistant from this point.

A. center B. circle
C. radius D. ellipse

_____10. Which of the following is the **correct** equation of a circle such as the center (2, 1) and radius 6.

A.$(x + 2)^2 + (y + 1)^2 = 36$

B. $(x - 2)^2 + (y - 1)^2 = 6$

C. $(x + 2)^2 + (y - 1)^2 = 36$

D. $(x - 2)^2 + (y - 1)^2 = 36$

_____11. What is the radius of the circle $(x + 8)^2 + (y - 3)^2 = 100$?

A. 10 B. 20

C. 50 D. 100

_____12. What is the center of the circle $(x-3)^2+(y+2)^2=81$?

A. $(-3,2)$ B. $(3,-2)$

C. $(3,2)$ D. $(9,9)$

_____13.Given the equation $(x+8)^2+(y+9)^2=49, find\ the\ center\ and\ the\ radius\ of\ the\ circle$.

A. center : $(-8,9); radius: 7$

B. center : $(-8,-9); radius: 49$

C. center : $(-8,-9); radius: 7$

D. center : $(8,9); radius: 49$

_____14. Which of the following is the **correct** equation of the translation $x^2+y^2=100; right\ 7\ units\ and\ down\ 2\ units.$

A. $(x-7)^2+(y+2)^2=100$

B. $(x-7)^2+(y+2)^2=10$

C. $(x+7)^2+(y-2)^2=100$

D. $(x-7)^2+(y-2)^2=100$

_____15.A homeowner is planning a circular sandbox in the backyard. She wants the diameter of the sandbox to be 16 ft. She uses graph paper and marks the center of the circle at $(-4,-9)$. What is the equation for the circle?

A. $(x-4)^2+(y+9)^2=8$

B. $(x-4)^2+(y+9)^2=16$

C. $(x+4)^2+(y+9)^2=64$

D. $(x-4)^2+(y-9)^2=64$

_____16. If $9^x=243, what\ is\ the\ value\ of\ x?$

A. 2 B. 5

C. 2.5 D. 10

_____17. If $2^{3x+2}=64, what\ is\ the\ value\ of\ x?$

A. $\frac{8}{3}$ B. $\frac{4}{3}$

C. 2 D. $\frac{3}{4}$

_____18.Which of the following is the form of Exponential?

A. $b^y=x$ B. bx^y

C. $x^y=b$ D. $b\ =xy$

_____19. Solve the equation $125^{2x}=25.$

A. $x=6$ B. $x=2$

C. $x=3$ D. $x=4$

_____20. What is the value of $\log_4 32=x$?

A. $x=\frac{5}{2}$ B. $x=4$

C. $x=32$ D. $x=10$

_____21.What is the exponential form of 4 $=\log_5 625?$

A. $5=4^{5x625}$ B. $4=625^5$

C. $625=5^4$ D. $5=4^{625}$

_____22. Suppose the population of a country is currently \$8,100,000. Studies show this country's population is increasing in 2% each year. What exponential function would be a good model for this country's population?

A. $y=8{,}100{,}000(2)^x$

B. $y=8{,}100{,}000(1.02)^x$

C. $y=8{,}100{,}000(0.98)^x$

D. $y=8{,}100{,}000(2)^x$

_____23. The value of a piece of equipment has a decay factor of 0.80 per year. After 5 years, the equipment is worth \$ 98,304. What was the original value of the equipment?

A. \$ 250,000 B. \$ 100,000

C. \$ 300,000 D. \$ 200,000

_____24. A new truck that sells for $ 29, 000 depreciates 12% each year. What is the value of the truck after 7 years?

A. $ 11,851.59 B. $ 10,851.59

C. $ 12,851.59 D. $ 9,851.59

_____25. In $A(t) = a(1 + r)^t$, the meaning of r as a variable of the exponential growth or exponential decay is ___.

A. the initial amount

B. rate of growth or decay

C. rate of time

D. number of time periods

_____26.The price of a new home is $ 350, 000. The value of the home appreciates 2% per year. How much will be the home be worth in 10 years?

A. $ 426,648.05

B. $ 430,648.05

C. $ 420,648.05

D. $ 42,648.05

_____27. Suppose you deposit $3000 in a savings account that pays interest at an annual rate of 4%. If no other money is added or withdrawn from the account, how much will be in the account after 10 years?

A. $ 3122.18 B. $ 4994.50

C. $ 4440.73 D. $ 86, 776.40

_____28. A tree 3 ft. tall grows 8% each year. How tall will the tree be at the end of 14 year?

A. 6.81 ft. B. 5.81 ft.

C. 8.81 ft. D. 7.81 ft.

_____29. A car depreciates 10% each year. If you bought this car today for $ 5000, how much will it be worth in 7 years?

A. $ 2109.48 B. $ 2300.48

C. $ 2291.48 D. $ 2391.48

_____30. Divide the $f(x) = x^2 + 7x + 10$ by $g(x) = x + 2$.

A. $\frac{f(x)}{g(x)} = (x + 2)(x + 5)$

B. $\frac{f(x)}{g(x)} = (x - 5)$

C. $\frac{f(x)}{g(x)} = (x - 2)(x - 5)$

D. $\frac{f(x)}{g(x)} = (x + 5)$

FOR NUMBERS 31-37. Select the answer on the word bank below and write the letter of the correct answer on the blank.

_____**31.** A line that divides a parabola into two mirror images.

_____**32.** The value of the vertex when the parabola opens up.

_____**33.** A shift of the graph horizontally or vertically.

_____**34.** This form $y = ax^2 + bx + c$ is called _____.

_____**35.** The _____ is $y = x^2$.

_____**36.** The $y = ax^2 + bx + c$ is called _____.

_____**37.** The value of the vertex when the parabola opens down.

A. parent quadratic function

B. minimum valuer

C. vertex form

D. maximum value

E. quadratic function

F. Axis of symmetry

G. vertex form of the parabola

H. translation