Hwk #28

1. What is a Relation? A set of ordered pairs

A bunch of points!

There may or may not be any special relationship amongst the points in a relation.

2. What is the Domain of a Relation?

All the x values written in numerical order without repeating

3. What is the Range of a Relation?

All the y values written in numerical order without repeating

Other names for Domain and Range:

Domain

- X
  - Independent Variable
  - Input
    - Run

Range

- Y
  - Dependent Variable
  - Output
    - Rise

4. State the Domain and Range of this Relation:

$(4,-1),(2,3),(4,-5),(-2,6),(1,3)$

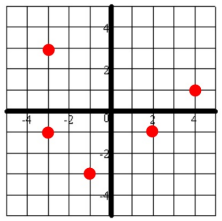
Domain: $\{-2,1,2,4\}$

Range: $\{-5,-1,3,6\}$

5. What is the domain and range of the Relation shown below:

Domain: $\{-3,-1,2,4\}$

Range: $\{-3,-1,1,3\}$



6. What is a Function?

A Function is a special kind of Relation.

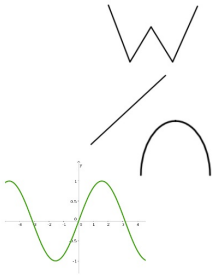
Every domain value is paired with exactly one range value.

For every x there is one and only one y.

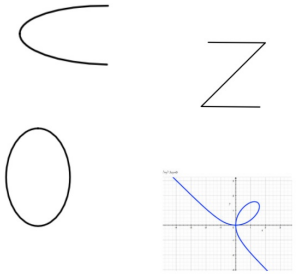
7. How can you use the Vertical Line Test
to tell if the graph of a relation represents a function?

If any vertical line touches a graph more than once NOT A FUNCTION

Is a Function



Is NOT a Function



Functions A Function is a special kind of Relation.
You can tell if the graph of a Relation can be called a Function if you perform the **Vertical Line Test**

VERTICAL LINE TEST If any vertical line can touch a graph more than once the graph is considered to NOT be a function.

Otherwise, if no vertical line will ever touch the graph more than once, then it IS a function.

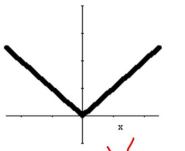
8. Is each of these relations a function?

a)

X	Y
-2	4
3	1
7	-6
4	1

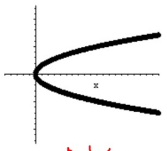
yes

b)

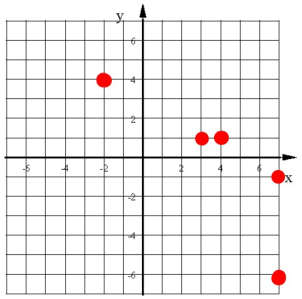


Yes

c)



NO



Does this relation represent a function?

(5,7),(-4,3),(6,1),(5,-2),(1,0)

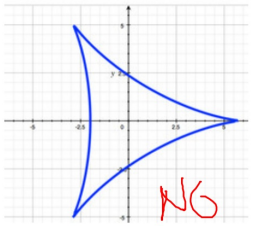
NO

Does each graph represent a function?

1.

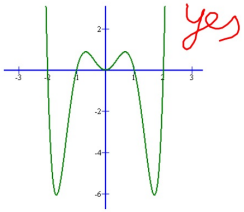
yes

2.



NO

3.



yes

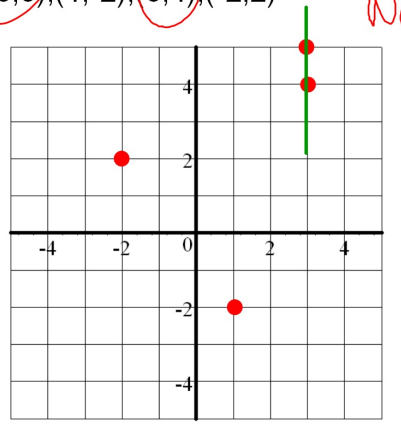
What is the only line that is NOT a function?

A vertical line

Does this relation represent a function?

(3,5),(1,-2),(3,4),(-2,2)

NO



No, 3 from the domain is paired with two different values from the range.

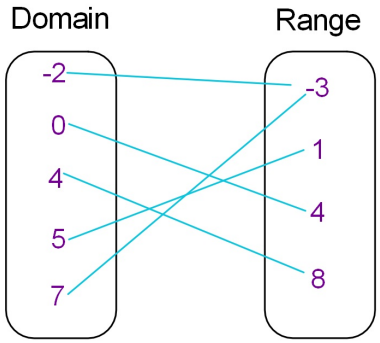
or

No, because the graph doesn't pass the Vertical Line Test

Mapping Diagram:

Does this relation represent a function?

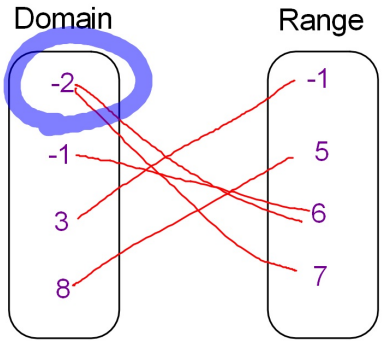
(7,-3),(4,8),(-2,-3),(5,1),(0,4) yes



Yes, every value from the domain is paired with only one value from the range.

Does this relation represent a function?

(-2,6),(3,-1),(8,5),(-2,7),(-1,6)



No, -2 from the domain is paired with two different values from the range.

9. What is a function rule?

Another way to say: An Equation relating the dependent and independent variables.

10. How do you say $f(x)$?

f of x

f is called the function name

x is the independent variable (the variable used to write the equation)

11. What is another way to write $f(x) = 7x - 8$?

y = 7x - 8

12. If $f(x) = -2x + 3$ what does $f(5)$ mean?

evaluate the function f for x=5.

Find $f(5)$. $= -2(5) + 3 = -7$

13. If $f(x) = x^2 + 3x$

find the range for this given domain: Domain: $\{-4, 0, 2\}$

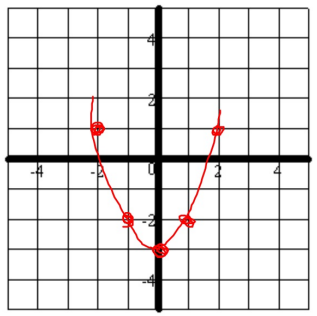
$f(-4) = 4$

$f(0) = 0$

$f(2) = 10$

a) $f(x) = x^2 - 3$

X	Y
-2	1
-1	-2
0	-3
1	-2
2	1



An equation with x^2 as the largest exponent is called a Quadratic Equation

The graph is called a Parabola