Your Name

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Notes

LESSON 3-1

FUNCTIONS

Objective: To be able to determine if a relation is a function given ordered pairs, a table, a mapping, an equation or a graph. To understand inverse relations with x and y and determine if the inverse relation is a function or not.

Life Lesson/Skill: When things do not output what they are supposed to, they are not functioning correctly. Like operations have inverses, so do functions and their graphs are related by reflection over the line y = x

Relation- a set of ordered pairs, an input is paired with an output   (x, y)

Remember ↴

Function- a Relation is a set of ordered pairs where the input is paired with exactly one output.
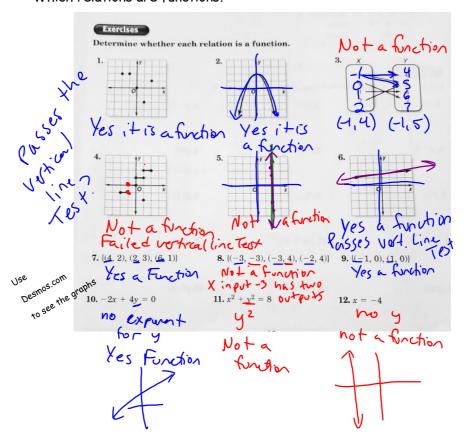
*Tables and Pairs and Mappings

Repeat x values have the same y output value, not different y outputs

*Graphs Pass The Vertical Line Test

- If a vertical line passes through only one point at a time, then the relation is a function.
- If it passes through more than one point at a time, then the relation is not a function, it failed the vertical line test.

* In an equation, Y has to be to the first power

Which relations are functions?

Exercises

Determine whether each relation is a function.

Passes the vertical line? Test.

1. *Yes it is a function*

2. *Yes it is a function*

3. *Not a function*
(-1, 4) (-1, 5)

4. *Not a function*
Failed vertical line Test

5. *Not a function*

6. *Yes a function*
Passes vert. Line Test

7. {(4, 2), (2, 3), (6, 1)}   *Yes a Function*

8. {(-3, -3), (-3, 4), (-2, 4)}   *Not a function*
X input -3 has two outputs

9. {(-1, 0), (1, 0)}   *Yes a function*

Use Desmos.com to see the graphs

10. $-2x + 4y = 0$
no exponent for y
Yes Function

11. $x^2 + y^2 = 8$
y^2
Not a function

12. $x = -4$
no y
not a function

Inverse Relations- set of ordered pairs in reverse order (the output is now the input, so the input becomes the output)

Just switch the x and y values

(0,3) --> (3,0)   (5,-4) --> (-4, 5)

the inverse relation   the inverse relation

What is the inverse relation of: (-2,7)? $(7, -2)$

$$\{(6, 4) , (3, -3) , (-1, 9) , (5, -3)\}$$

Is this a function? Yes

List the Domain: $\{6, 3, -1, 5\}$

List the Range: $\{4, -3, 9, -3\}$

Write the inverse of the relation:

$(4, 6) \quad (-3, 3) \quad (9, -1) \quad (-3, 5)$

Is the inverse relation a function?

Not a function

Homework:

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