

2.3 Introduction to Functions

- Obj: 1. State domain & range & determine if a relation is a function.
 2. Use function notation.

Function: a relationship between 2 variables such that each value of the 1st variable is paired w/ exactly one value of the second variable.
 (one y value for every x)

Oct 17-10:39 AM

x	y
1	-3.6
2	-3.6
3	4.2
4	4.2
5	10.7
6	12.1
52	52

x's can't repeat
 Function

x	y
3	7
3	8
4	42
10	34
11	18
52	52

Not a
 Fnc

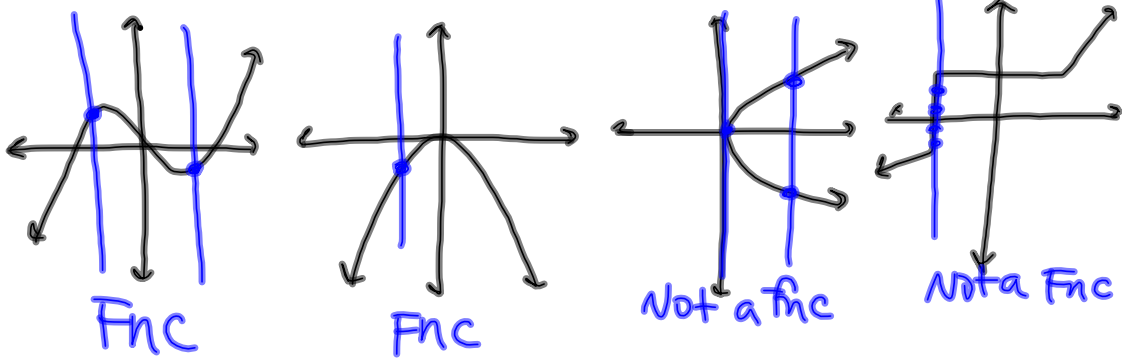
x	y
3	7
3	7
4	8
10	12

Fnc
 Be Careful!

Oct 17-10:56 AM

Vertical Line Test:

If the relation is a fnc, then any vertical ^{line} will pass through only once.



Oct 17-11:00 AM

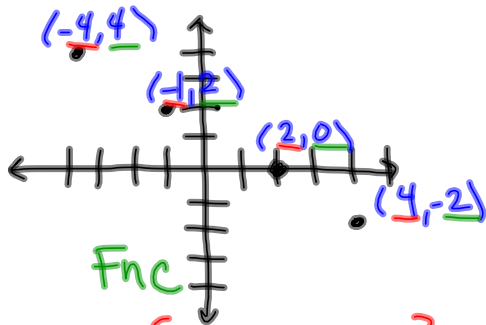
Relation: a relationship between 2 variables such that each value of the 1st variable is paired w/ one or more values of the 2nd variable.

* Every fnc is a relation
Not every relation is a fnc.

Oct 17-11:03 AM

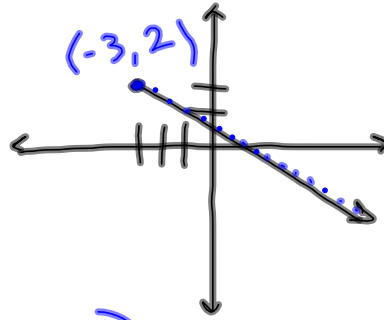
Domain: all possible x values

Range: all possible y values



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

$$R: \{-2, 0, 2, 4\}$$

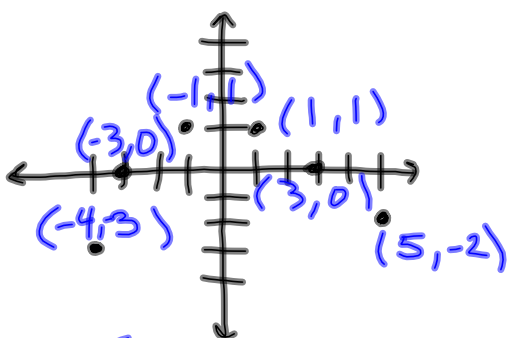


$$D: x \geq -3$$

$$R: y \leq 2$$

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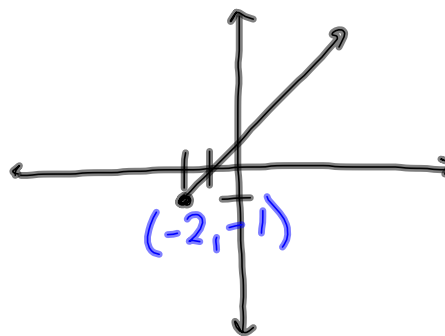
Find domain & range:



$$D: \{-4, -3, -1, 1, 3, 5\}$$

$$R: \{-3, -2, 0, 1\}$$

Discrete Fnc.



$$D: x \geq -2$$

$$R: y \geq -1$$

Continuous Fnc.

Oct 17-11:12 AM

Interval Notation

$$D: x \geq -2 \quad [-2, \infty)$$

$$R: \underline{*y \geq -1} \quad *[-1, \infty)$$

(or [can't equal can equal (small, big)

$$x < 4 \quad (-\infty, 4)$$

$$y < -8 \quad (-\infty, -8)$$

Oct 17-11:19 AM

Function Notation

$$\underline{y} = 2x + 5 \quad \longrightarrow \quad \text{Func Notation}$$

$$\underline{f(x)} = 2x + 5$$

"f of x"

x: independent variable
 y (f(x)): dependent variable

$$(x, y) \longrightarrow (x, f(x))$$

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If $f(x) = 2x^2 - 3x + 1$, find $f(x)$ when $x = 3$ and $x = 1$

$$f(3) = 2(3)^2 - 3(3) + 1 \\ = 18 - 9 + 1 = 10$$

$$f(1) = 2(1)^2 - 3(1) + 1 \\ = 2 - 3 + 1 = 0$$

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