Functions, Domain, and Range

a particular place/skill that you have.

The numbers you have to work with

lowest → highest

Functions vs. Relations

Relation:

two variables, where changing one affects the other.

km driven vs. Cost

$x^2 + y^2 = 36$

$C = 3.50 + 0.50k$

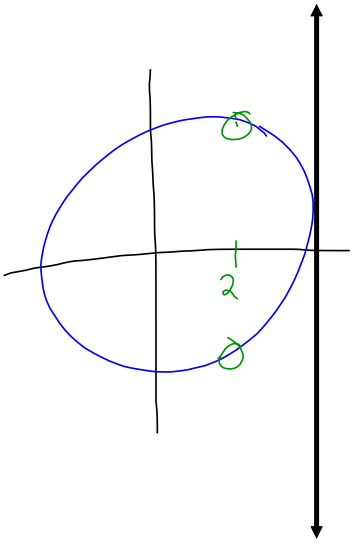
Function:

A relation where every x-value has only one y-value

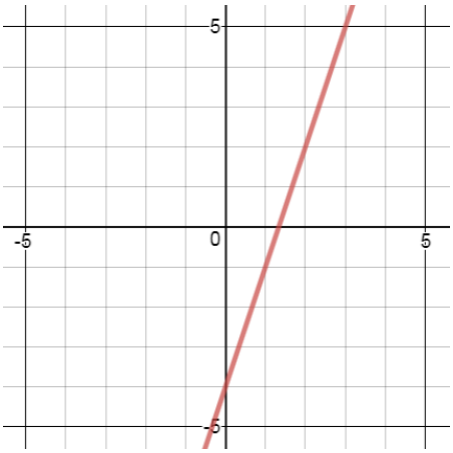
Vertical Line Test:

up and down

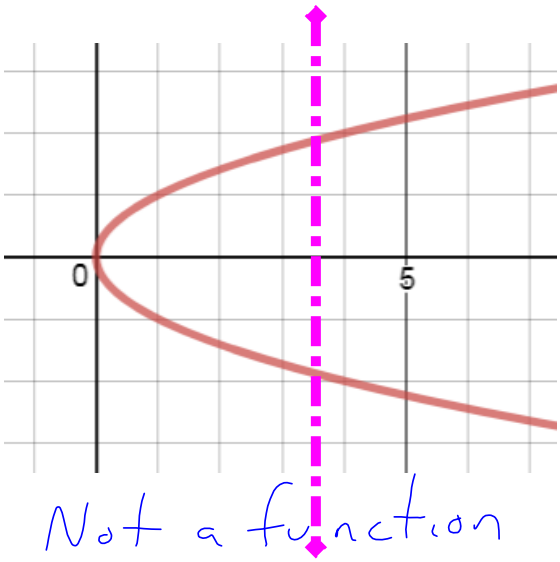
If a vertical line touches a graph more than once for ANY x-value then you do not have a function


0
1
2
3

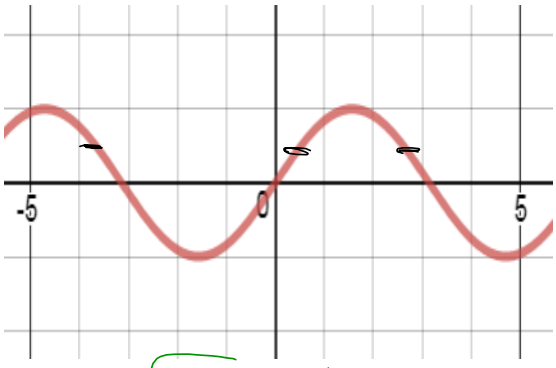
Function or Relation?



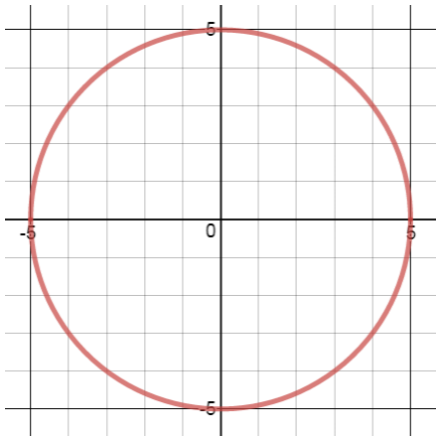
Function



Not a function



Function



Relation

Domain and Range

Domain: All x-values in a Relationship

Range: All possible y-values in a relationship.

Determine the domain and range for the following:

X	Y
2	7
3	10
4	13
7	22

$D \rightarrow \{2, 3, 4, 7\}$

$R \rightarrow \{7, 10, 13, 22\}$

"is an element of"

$y = 2x - 5$

real numbers

$D \rightarrow \{x \in \mathbb{R}\}$

$R \rightarrow \{y \in \mathbb{R}\}$

$y = \frac{1}{x+3}$ "such that"

$D \rightarrow \{x \in \mathbb{R} \mid x \neq -3\}$

$R \rightarrow \{y \in \mathbb{R} \mid y \neq 0\}$

$x^2 + y^2 = 25$

$\{x \in \mathbb{R} \mid -5 \leq x \leq 5\}$

$\{y \in \mathbb{R} \mid -5 \leq y \leq 5\}$

You have 100 m of fence and you are going to make a pen for you dog to run in outside, against the side of your barn.

a) Express the area function in terms of the width.

b) Determine the domain and range of the function.

c) Determine the maximum area available for your dog.

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1, 3, 4, 5, 6, 8