Lesson 2.1: Functions

Domain: the set of input values (x-values)

Range: the set of output values (y-values)

Find the domain and range of the given relation.

a) $(-2,3),(1,2),(3,1),(-4,-3)$

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

Range: $\{3, 2, 1, 3\}$

b) $(-7,4),(2,-5),(1,-2),(-3,6)$

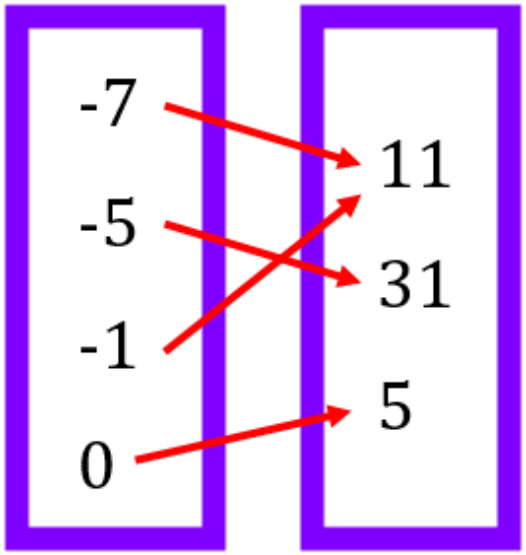
D: $\{-7, 2, 1, -3\}$

R: $\{4, -5, -2, 6\}$

Function: a relation for which each input has exactly one output

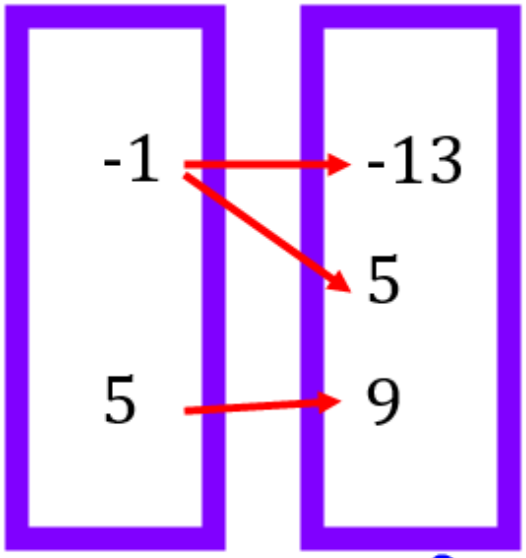
Tell whether the relation is a function. *Explain.*

* Input Output



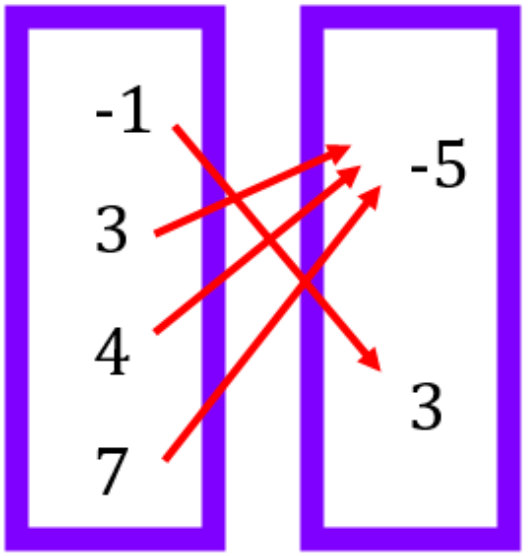
Function.
Each input has one output

* Input Output



Not a function.
-1 goes to two outputs

* Input Output



Function
Each input has one output.

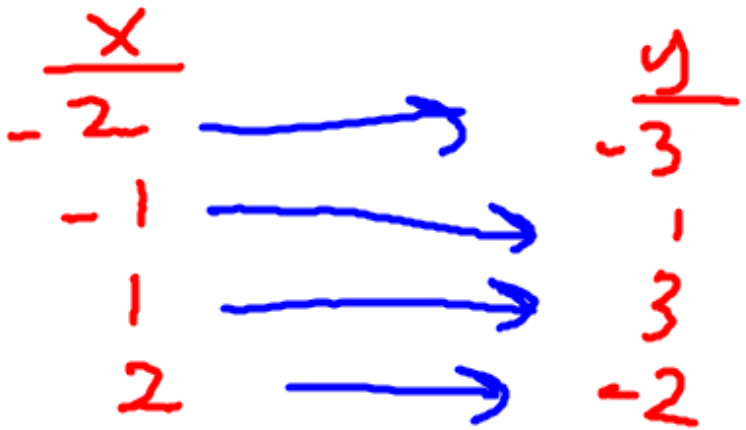
Tell whether the relation is a function. *Explain.*

a) $(-2,-3),(-1,1),(1,3),(2,-2)$

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

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

b)

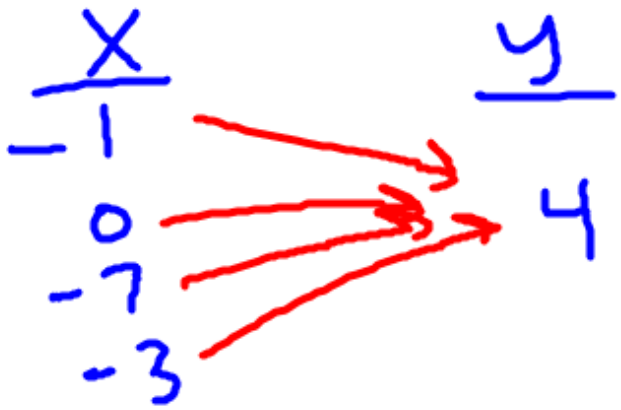


c)

Function

Tell whether the relation is a function. *Explain.*

b) $(-1,4), (0,4), (-7,4), (-3,4)$



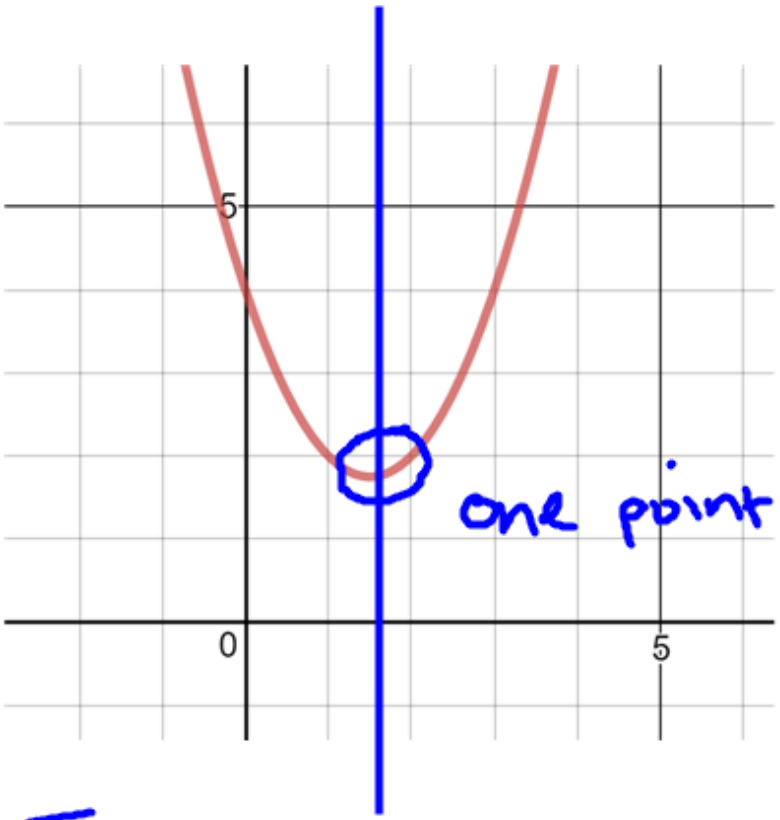
Function! each input has one output

c) $(5,-3), (0,2), (-3,2), (5,1)$

Not a function the input (5) has 2 outputs.

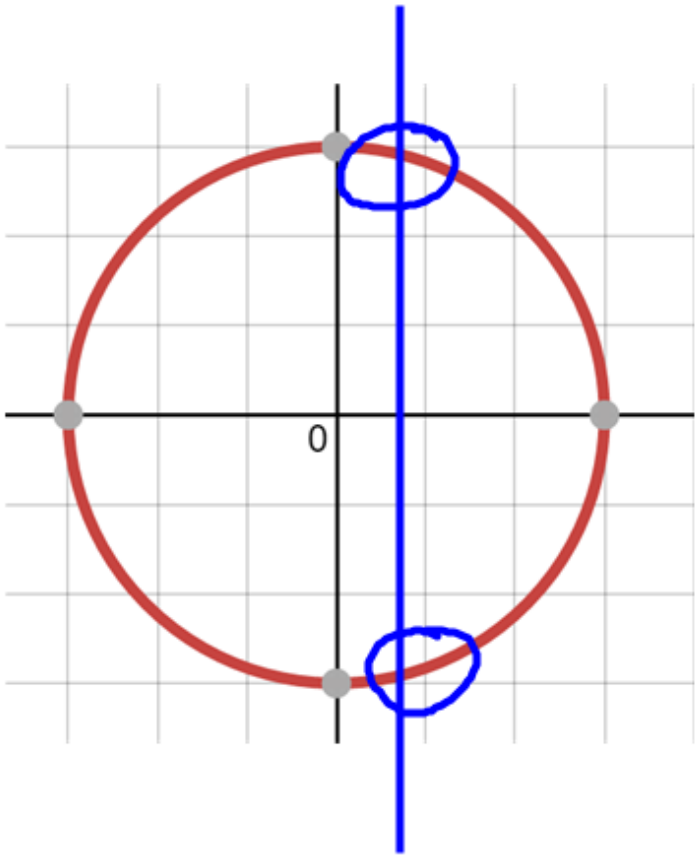
Determine if the following relation is a function.

Vertical Line Test



one point

Function.
Each input has one output.



Not a function.

Evaluate the following functions:

Line $y = mx + b$

$f(x) = x^2 - 3x + 1$

Not linear

$g(x) = |x - 3| + 4$

Abs. Value

Not linear

$h(x) = 3x + 7$

$y = mx + b$ ✓

Linear

a) f(2)

$= (2)^2 - 3(2) + 1$

$= 4 - 6 + 1$

$= -2 + 1$

$= \boxed{-1}$

b) g(-3)

$= |-3 - 3| + 4$

$= |-6| + 4$

$= 6 + 4$

$= \boxed{10}$

c) h(-4)

$= 3(-4) + 7$

$= -12 + 7$

$= \boxed{-5}$