Algebra 1 1.7

Determine whether a relation is a function.

Find function values

relation (x, y)

function each input has only one output

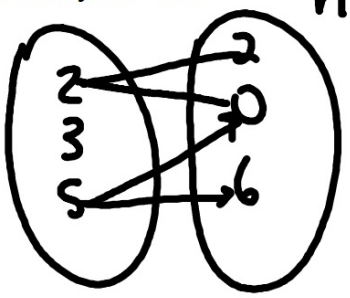
discrete

continuous

vertical line test

cut & paste activ

Quiz today 1.5-1.6



no func.

Every input has exactly one output!

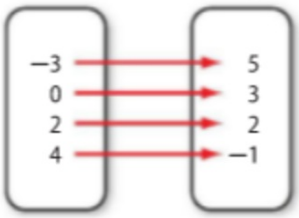
KeyConcept Function

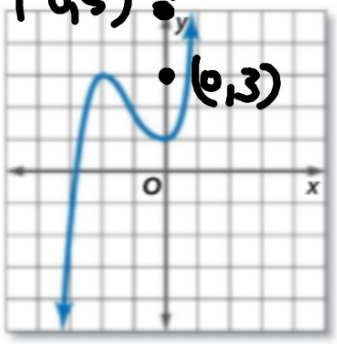
Words A function is a relation in which each element of the domain is paired with *exactly* one element of the range.

VLT (95) Pass → func.

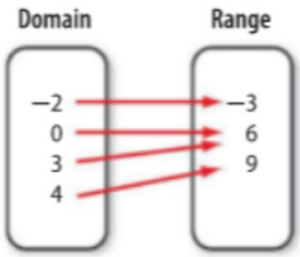
Examples

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





a.



(−2, 3)
(0, 6)
(3, 6)
(4, 9)

b.

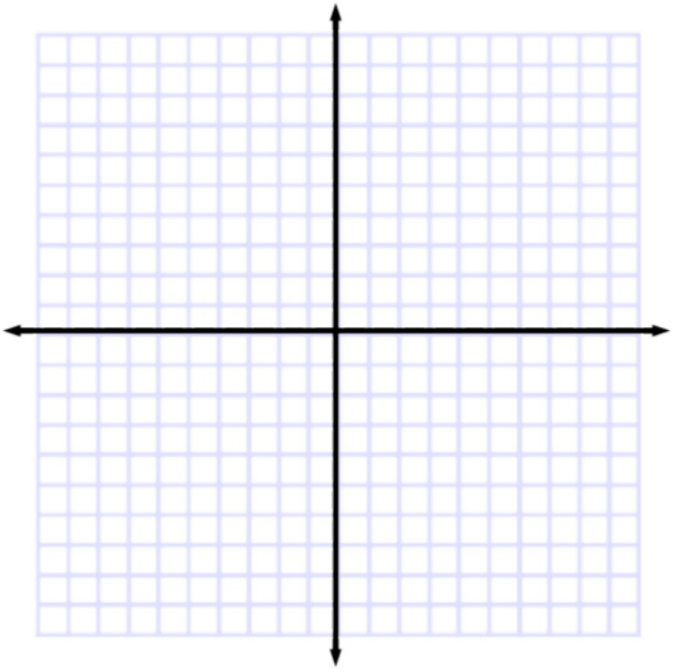
Domain (x)	1	3	5	1
Range (y)	4	2	4	−4

Guided Practice

1. $\{(2, 1), (3, -2), (3, 1), (2, -2)\}$

Example 3 Equations as Functions

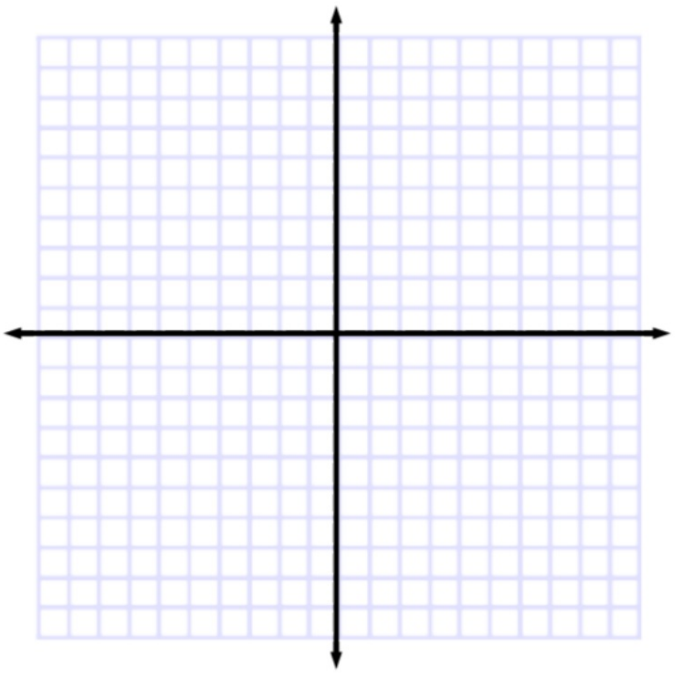
Determine whether $-3x + y = 8$ is a function.



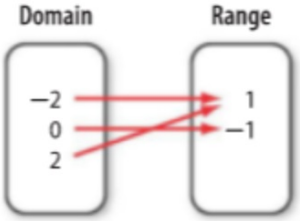
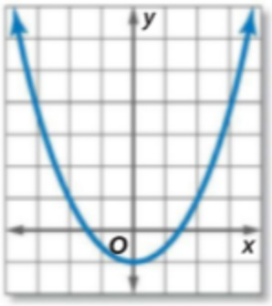
GuidedPractice **Determine whether each relation is a function.**

3A. $4x = 8$

3B. $4x = y + 8$



ConceptSummary Representations of a Function

Table	Mapping	Equation	Graph
		$f(x) = \frac{1}{2}x^2 - 1$	

2 Find Function Values

Equations that are functions can be written in a form called **function notation**. For example, consider $y = 3x - 8$.

Equation	Function Notation
$y = 3x - 8$	$f(x) = 3x - 8$

In a function, x represents the elements of the domain, and $f(x)$ represents the elements of the range. The graph of $f(x)$ is the graph of the equation $y = f(x)$. Suppose you want to find the value in the range that corresponds to the element 5 in the domain. This is written $f(5)$ and is read *f of 5*. The value $f(5)$ is found by substituting 5 for x in the equation.

Example 4 Function Values

For $f(x) = -4x + 7$, find each value.

GuidedPractice

For $f(x) = 2x - 3$, find each value.

4A. $f(1)$

4B. $6 - f(5)$

4C. $f(-2)$

4D. $f(-1) + f(2)$