Algebra I
Lesson 4-6

- I can determine whether a relation is a function.
- I can find function values.

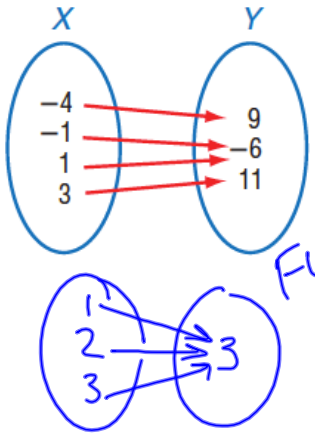
A function is a relation in which each element of the domain is paired with exactly one element of the range of y.

x →

{(0, 1), (1, 2), (2, 3)}

{(0, 1), (0, 2), (1, 2), (2, 3)}

Determine whether each relation is a function. Explain.



Function

x	y
−3	6
2	5
3	1
2	4

Not a Function

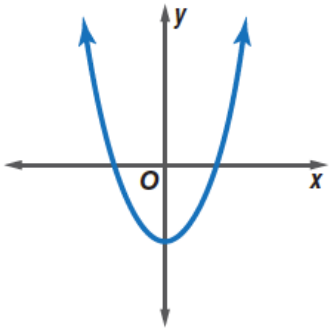
$\{(0,0),(1,1),(2,2),(3,3)\}$

$\{(-2, 4), (1, 5), (3, 6), (5, 8), (7, 10)\}$

Function

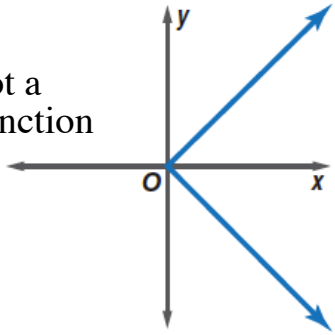
If no Vertical line can be drawn so that it intersects the graph more than once, the graph is a function. This is called the Vertical line test.

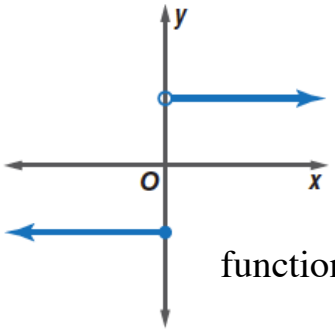
Determine whether each graph is a function.



function

not a function





function

Determine whether $2x - y = 6$ is a function.

$2x - 0 = 6$

$\frac{2x}{2} = \frac{6}{2}$

$x = 3$

$(3, 0)$

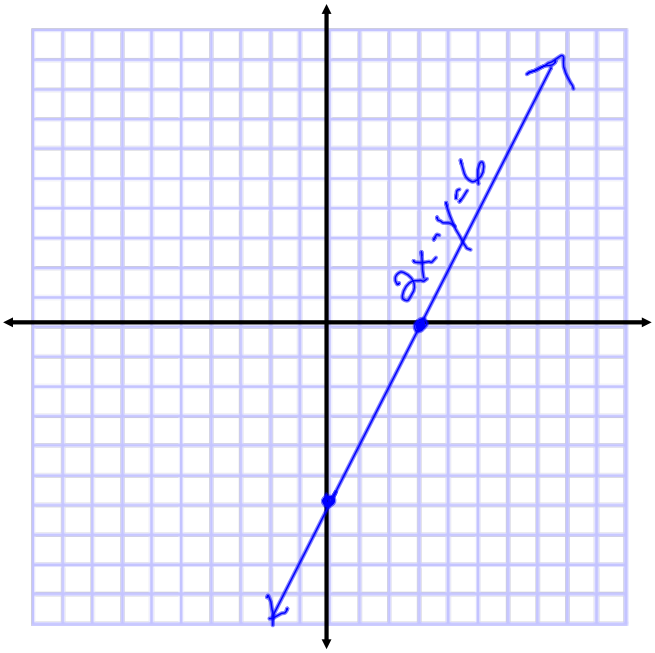
$2(0) - y = 6$

$-y = 6$

$\frac{-y}{-1} = \frac{6}{-1}$

$y = -6$

$(0, -6)$



Equations that are functions can be written in a form called function notation.

$y = 3x - 8$ $\qquad$ $f(x) = 3x - 8$

"f of x"

x = domain

f(x) = range

If $f(x) = 2x + 5$, find each value.

$f(-2)$

$f(-2) = 2(-2) + 5$

$f(-2) = -4 + 5$

$f(-2) = 1$

$f(1) + 4$

$f(1)+4 = (2(1)+5)+4$

$f(1)+4 = (2+5)+4$

$= 7 + 4$

$= 11$

$f(x + 3)$

$f(x+3) = 2(x+3)+5$

$= 2x + 6 + 5$

$= 2x + 11$

Nonlinear Function Values

If $h(z) = z^2 + 3z - 4$, find each value.

$h(-4)$ $\quad$ $h(5a)$ $\quad$ $2[h(g)]$

$h(-4) = (-4)^2 + 3(-4) - 4$

$= 16 + -12 + -4$

$= 16 + -16$

$h(-4) = 0$

$h(5a) = (5a)^2 + 3(5a) + -4$

$= 25a^2 + 15a + -4$

$2[h(g)] = 2[g^2 + 3g + -4]$

$= 2g^2 + 6g + -8$

Assignment:

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