

Unit 6 Day 1

Review of Functions

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Relation - A set of ordered pairs. $\{(2,3)(4,5)\}$

Function - A relation in which each x-value (input) corresponds to exactly one y-value (output)

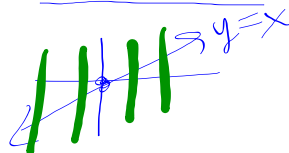
Means: No repeated x values. $(2,3) (2,4)$

All functions are relations but not all relations are functions.

Function - The input value x is your student ID number and the output value y is the number of pets you have. (x,y)

Relation - The input value x is the letter grade on the last unit test and the output value y is the ID number of each student enrolled in the course. $(90,y) (90,y)$

Graphically - Vertical line test - A relation is a function if a vertical line does not intersect the graph in more than one point.

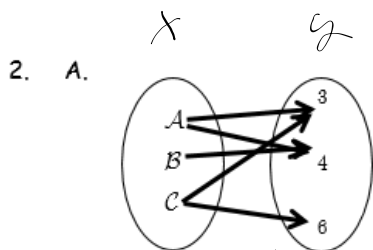


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Which relation is a function? Explain why the other is not.

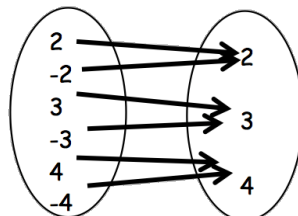
1. A. $\{(2, 3), (8, 3), (4, 8)\}$ yes, function ~~is~~

B. $\{(-1, 4), (-2, 6), (3, 5), (3, 0)\}$ No, not a function
 $3 \rightarrow 5$ and $3 \rightarrow 0$

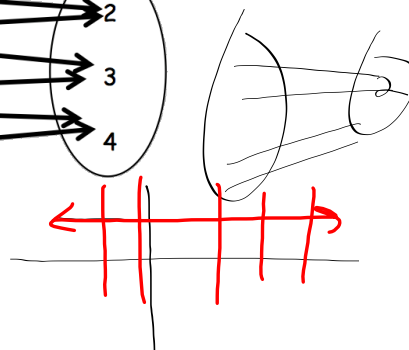


No,
 A maps to 3 and 4
 C maps to 3 and 6

B.



yes



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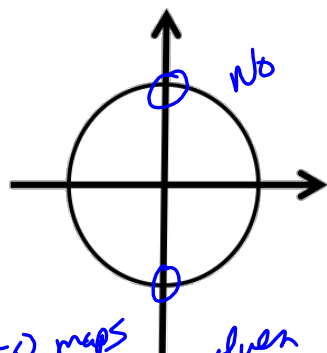
3. A. $(x-h)^2 = 4p(y-k)$
 $(x-2)^2 = 4(y+3)$

yes $\rightarrow$ parabola. Every
 x maps to only 1
 y -value.

B. $(y-k)^2 = 4p(x-h)$
 $(y+3)^2 = -4(x-2)$

Not a function.
 y^2
 Fails vert line test

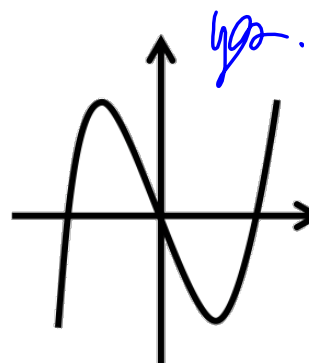
4. A.



$x=0$ maps
 to 2 y -values

No

B.



yes.

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5. Given the set of points: $\{(1, 2), (3, 4), (5, 6)\}$ state another point so that the relation is no longer a function. _____

$(1, 3)$
 ~~$(2, 4)$~~
 $(3, 5)$
 $(5, 7)$

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Function Notation $\rightarrow f(x)$ $\rightarrow$ read "f of x", where x is the input value (domain) and $f(x)$ is the output value (range)

$$f(x) = y$$

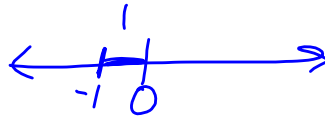
(x, y)

ie: $f(2) = 4$ would correspond to the point $(2, 4)$.

When $x = 2$, $y = 4$.

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Evaluate each of the following:



1. $h(t) = |t + 2| + 3$, find $h(-3)$

$$h(-3) = |-3 + 2| + 3$$

$$= |-1| + 3$$

$$= 1 + 3$$

$$h(-3) = 4 \quad (-3, 4)$$

2. $g(a) = 3^{3a-2}$ find $g(1)$

$$g(1) = 3^{3(1)-2} = 3^{3-2} = 3^1 = 3$$

$$(1, 3)$$

3. $f(x) = -2x^2 + 4$, find $f(4)$ $P \in \mathbb{R}^m \mathbb{A}$

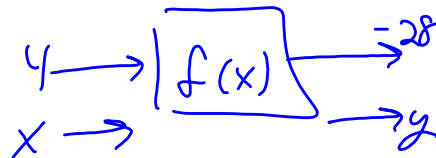
$$f(4) = -2(4)^2 + 4$$

$$= -2(16) + 4$$

$$= -32 + 4$$

$$= -28$$

$$f(4) = -28 = y$$



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4. $g(x) = 4x - 2$, find $g(2a)$

$$g(2a) = 4(2a) - 2 = 8a - 2$$

$$g(2a) = 8a - 2$$

5. $f(x) = x^2 - 2x$, find $f(n^2)$

$$f(n^2) = (n^2)^2 - 2(n^2)$$

$$f(n^2) = n^4 - 2n^2$$

$$\overbrace{n^2 \cdot n^2}^{n^4}$$

$$n^3 \cdot n^3 = n^6$$

$$(n^2)^2 = n^2 \cdot n^2 = n^4$$

6. $h(x) = \sqrt{2x-3}$, find $h(n+4)$

$$h(n+4) = \sqrt{2(n+4)-3}$$

$$= \sqrt{2n+8-3}$$

$$= \sqrt{2n+5}$$

$$\sqrt{2n+4} \neq \sqrt{2n} + \sqrt{4}$$

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7. Given the graph, $f(x)$, at right, find each of the following:

a. $f(-1) = \underline{-1}$ $(-1, -1)$

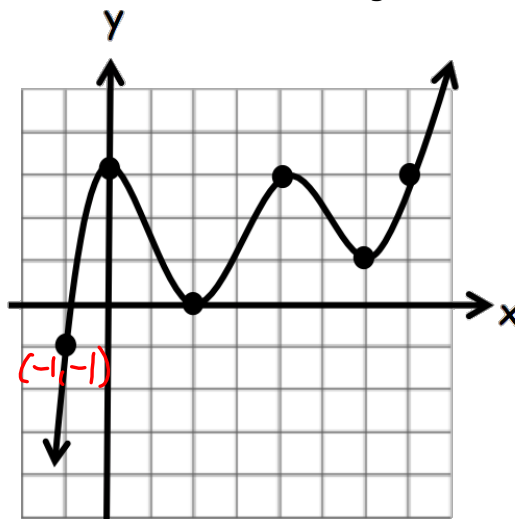
b. $f(0) = \underline{3}$

c. $f(2) = \underline{0}$

d. $f(4) = \underline{3}$

e. $f(6) = \underline{1}$

f. $f(7) = \underline{3}$



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