Edgenuity

Warm-Up | Evaluating Functions

Lesson Question

Lesson Goals

Evaluate function values using function _____.

Determine _____ values given input values.

Determine _____ values given output values.

Words to Know

Fill in this table as you work through the lesson. You may also use the glossary to help you.

evaluate	to determine the _____ of
function	a _____ in which each element of the domain is mapped to (paired with) exactly one element of the _____
input	a value that is transformed by a _____ and becomes output
output	the _____ of an input that has been transformed by a process

Warm-Up | Evaluating Functions

Evaluating Tables of Functions

Use the table of the given **function** to find the missing values.

input

$f(2) =$ ☐

output

$f(x) = 58$

$x =$ ☐

$f(6) = 58$

inputs	☐
x	$f(x)$
−2	−38
0	−2
2	−6
4	−2
6	58

Evaluating Functions in Symbolic Form

COMPLETING A TABLE

Define the function

$$f(x) = x^4 - 3x^3 + 2x - 1.$$

$f(\square) = 0^4 - 3(0)^3 + 2(0) - 1$

$= 0 - 0 + 0 - 1$

$= \square$

ordered pair: $(0, \square)$

Complete the table by determining the function's value when $x = 0$.

x	$f(x)$
−1	1
0	
1	−1
2	−5

FINDING AN OUTPUT VALUE USING A FUNCTION

Evaluate the function to determine the output value when the input value is -2.

$f(\square) = (-2)^4 - 3(-2)^3 + 2(-2) - 1$

$= \square - 3(\square) + (-4) - 1$

$= 16 + 24 + (-4) - 1$

$= \square$

ordered pair: $(-2, \square)$

Define the function

$f(x) = x^4 - 3x^3 + 2x - 1$

x	$f(x)$
−1	1
0	−1
1	−1
2	−5

Instruction | Evaluating Functions

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Evaluating Functions in Graphical Form

Use the given function's graph to determine the **output** value when the **input** is 1.

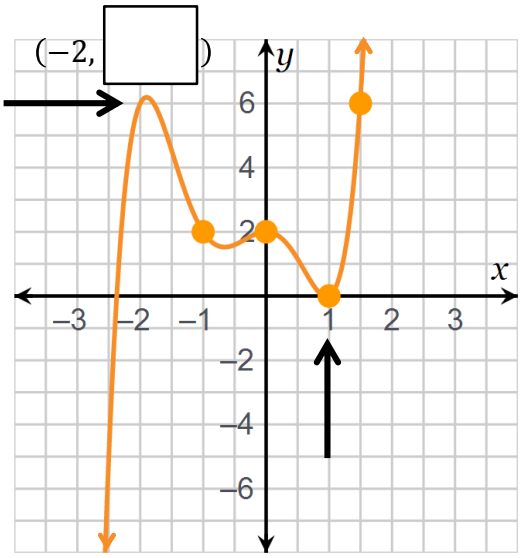
$f(1) =$ ☐

$(1,$ ☐ $)$

What is the function's value when $x = -2$?

$(-2,$ ☐ $)$

$f(-2) =$ ☐



Slide 6

Evaluating and Analyzing a Function

The function $f(h) = -720h + 10{,}080$ is used to determine the volume of water, in gallons, in a pool based on a certain number of hours, h, that the pool has been draining. How much water is left in the pool after 12 hours of draining?

Input: ☐ hours $\quad h = 12$

Output: $f(h)$ (volume, in gallons)

$$f(\square) = -720(\square) + 10{,}080$$

$$= -8{,}640 + 10{,}080$$

$$= \square \text{ gallons}$$

Instruction | Evaluating Functions

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Determining the Input Using an Equation

Determine the input that would give an output value of $\frac{18}{5}$.

$$f(x) = \frac{1}{5}x + 4$$

x	$f(x)$
−3	$\frac{17}{5}$
−1	$\frac{19}{5}$
1	$\frac{21}{5}$
3	$\frac{23}{5}$

$$\left(\square\right) = \frac{1}{5}x + 4$$

$$-\frac{20}{5} \qquad -4$$

$$5 \cdot \left(-\frac{2}{5}\right) = \frac{1}{5}x \cdot 5$$

$$\square = x$$

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Analyzing a Graph to Determine an Input Value

Use the graph to determine the input values that correspond to the given output values.

Circle the points with an output of 24.

$f(x) = 24$

$x \approx -3.27$

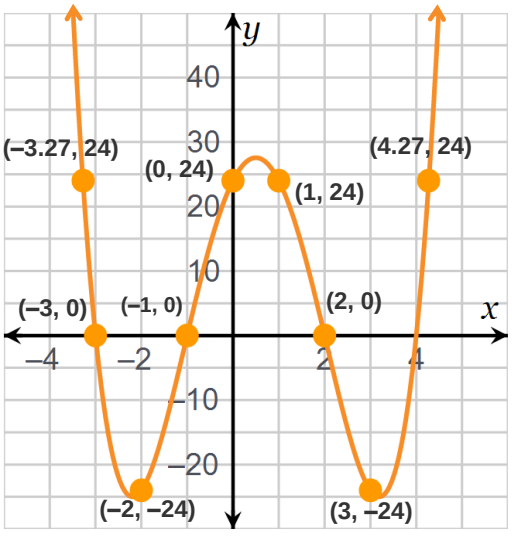
$x = \square$

$x = \square$

$x \approx 4.27$

$f(x) = 80$

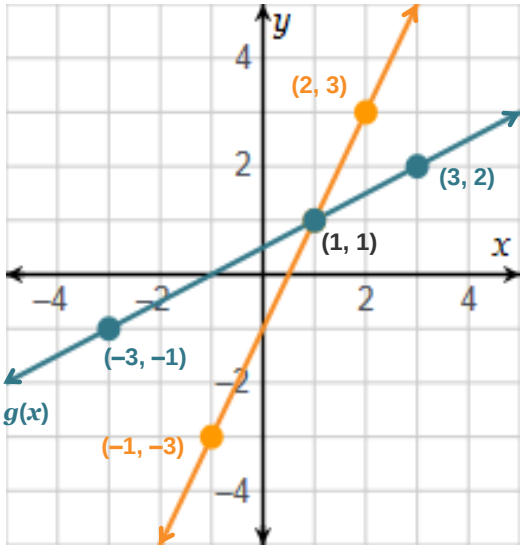
$\square$ inputs will have an output of 80.



Inverse Functions

Compare the inputs and outputs of the given functions.

$f(x) = 2x - 1$ and $g(x) = 0.5x + 0.5$



The inputs of function f are the same as the outputs of function g, and vice versa.

$g(x)$ is the ☐ of $f(x)$.

They are inverses of each other.

FINDING THE INVERSE OF A FUNCTION

Step 1: Replace $f(x)$ with y.

$$y = 2x - 1$$

Step 2: Switch the x and the y:

$$\square = \square - 1$$

Step 3: Solve for y.

$$x = 2y - 1$$
$$+1 \qquad +1$$

$$\frac{x+1}{2} = \frac{2y}{2}$$

$$\frac{1}{2}x + \frac{1}{2} = \square$$

$$y = \frac{1}{2}x + \frac{1}{2}$$

$$\square = \frac{1}{2}x + \frac{1}{2}$$

Summary | Evaluating Functions

Lesson Question	How are the different representations of a function used to determine the relationship between the quantities?

Answer

Use this space to write any questions or thoughts about this lesson.