

What's Going On?

Checking In

Minds on

Solve Me!

Action!

Function Notation

Consolidation

Function Creation

Learning Goal - I will be able to substitute values and expressions into equations written in function notation.

Friday Quiz, every Friday

- They will be about 10-15 minutes long
- They will count, but not for much
- They will test the BASICS of whatever we are doing.

What's happening at

gilbertmath.com?

Minds on

Solve Me!

$$y = -3x + 7$$

Given the linear equation above, determine:

- a. The value of y when $x = 5$
- b. The value of y when $x = -1$
- c. The value of y when $x = 0$

- d. The value of x when $y = 4$
- e. The value of x when $y = -8$
- f. The value of x when $y = 0$

Minds on

Solve Me!

$$y = -3x + 7$$

Given the linear equation above, determine:

a. The value of y when $x = 5$

$$y = -8$$

b. The value of y when $x = -1$

$$y = 10$$

c. The value of y when $x = 0$

$$y = 7$$

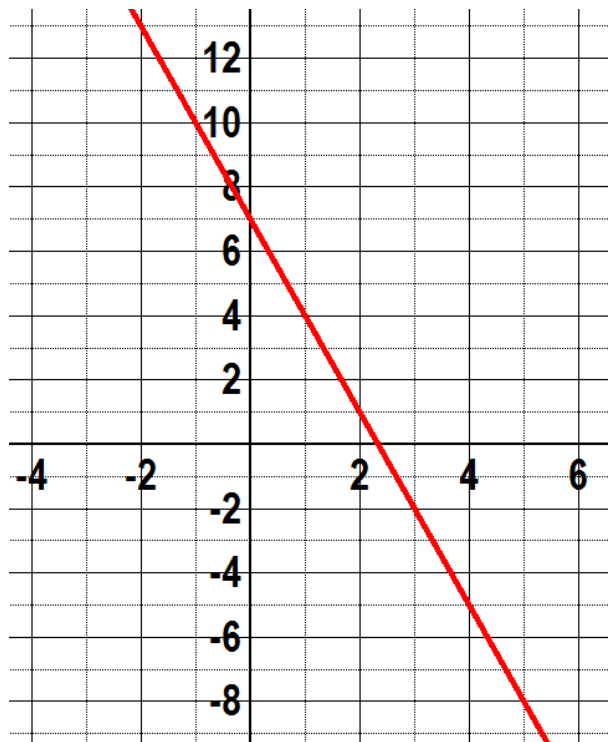
d. The value of x when $y = 4$

$$x = 1$$

e. The value of x when $y = -8$

$$x = 5$$

f. The value of x when $y = 0$



$$0 = -3x + 7$$

$$\frac{-7}{-3} = \frac{-3x}{-3}$$

$$x = \frac{7}{3}$$

Minds on**Solve Me 2.0!**

$$y = x^2 - 4x - 12$$

Given the quadratic equation above, determine:

- a. The value of y when $x = 0$
- b. The value of y when $x = 3$
- c. The value of y when $x = -5$

- d. The value of x when $y = 0$
- e. The value of x when $y = 9$
- f. The value of x when $y = -7$

Minds on

Solve Me 2.0!

$$y = x^2 - 4x - 12$$

Given the quadratic equation above, determine:

- a. The value of y when $x = 0$

$$y = -12$$

- b. The value of y when $x = 3$

$$y = -15$$

- c. The value of y when $x = -5$

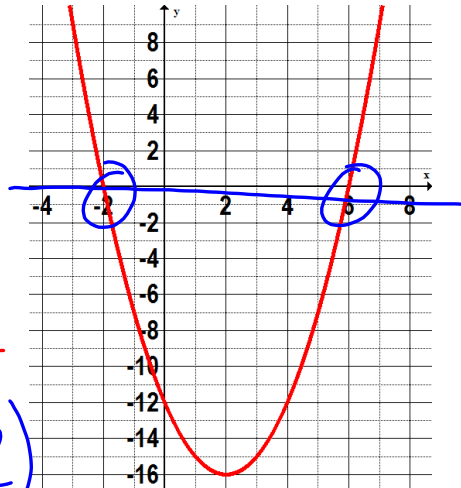
$$y = 33$$

- d. The value of x when $y = 0$

$$0 = x^2 - 4x - 12$$

$$0 = (x - 6)(x + 2)$$

$$x = 6 \text{ and } x = -2$$



- e. The value of x when $y = 9$

$$x^2 - 4x - 12 = 9$$

$$x^2 - 4x - 21 = 0$$

$$(x - 7)(x + 3) = 0$$

$$x = 7 \text{ and } x = -3$$

- f. The value of x when $y = -7$

$$x^2 - 4x - 12 = -7$$

$$x^2 - 4x - 5 = 0$$

$$(x - 5)(x + 1) = 0$$

$$x^2 + 1x - 5x - 5$$

Action!

NEW TERM

Function Notation

Notation, such as $f(x)$, used to represent the value of the dependent variable for a given value of the independent variable, x .

equation

$$y = -3x + 5$$

function

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

Action!

Look it up!

function ('fʌŋkʃən) [?]

— *n*

1. the natural action or intended purpose of a person or thing in a specific role: *the function of a hammer is to hit nails into wood*
2. an official or formal social gathering or ceremony
3. a factor dependent upon another or other factors: *the length of the flight is a function of the weather*

$$A = \frac{1}{2}bh \quad \dots \rightarrow \quad f(b, h) = \frac{1}{2}bh$$

"the area of a triangle is a function of the width of the base and the height of the triangle"

Action!

Function Notation

WHITEBOARDS

Write each equation in *function form*.

$$y = 3x - 6 \quad \dots \rightarrow f(x) = 3x - 6$$

$$k = 2b^2 - 4b + 1 \quad \dots \rightarrow f(b) = 2b^2 - 4b + 1$$

$$y = \sqrt{x + 3} \quad \dots \rightarrow f(x) = \sqrt{x + 3}$$

$$d = 4t - 5 \quad \dots \rightarrow f(t) = 4t - 5$$

Action!

Function Notation

We can use function notation to "evaluate" functions given the value of the independent variable(s).

Example 1: Given $f(x) = 2x + 5$, evaluate:

a) $f(5)$

$$\begin{aligned} f(5) &= 2(5) + 5 \\ &= 10 + 5 \\ &= 15 \end{aligned}$$

b) $f(-2)$

$$\begin{aligned} f(-2) &= 2(-2) + 5 \\ &= 1 \end{aligned}$$

Action!

Function Notation

Example 2: Given $g(x) = 2x^2 - 4x$, evaluate $g(3) + g(-2)$.

$g(x) = 2x^2 - 4x$ evaluate $g(3) + g(-2)$

$$\begin{aligned} g(3) &= 2(3)^2 - 4(3) \\ &= 18 - 12 \\ &= 6 \end{aligned}$$

$$\begin{aligned} g(-2) &= 2(-2)^2 - 4(-2) \\ &= 16 \end{aligned}$$

$$g(3) + g(-2) = 22$$

Action!

Function Notation

Example 3: Using the following graph, determine:

a) $g(7)$

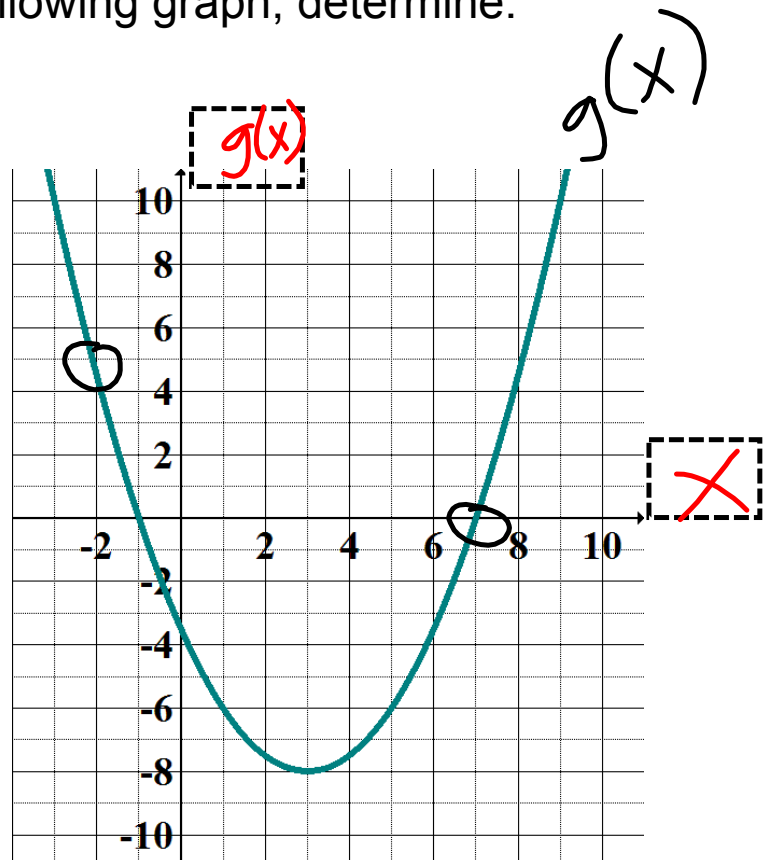
$$g(7) = 0$$

b) $g(-2)$

$$g(-2) = 5$$

c) x when $g(x) = -6$

1 and 5



Action!

Function Notation

Example 4:

Given $h(x) = 5x + 3$, determine x when $h(x) = 7$.

$$7 = 5x + 3$$

-3 $+3$

$$4 = 5x$$

$\frac{4}{5}$ $\frac{1}{5}$

$$x = \frac{4}{5}$$

Action!

Function Notation

Example 5: Consider $f(x) = x^2 + 5x$ and $g(x) = -3x + 2$.

Determine:

a) $f(2b)$

$$\begin{aligned} f(2b) &= (2b)^2 + 5(2b) \\ &= 4b^2 + 10b \end{aligned}$$

b) $f(a + 3) - g(a + 3)$

$$\begin{aligned} f(a+3) &= (a+3)^2 + 5(a+3) \\ &= (a+3)(a+3) + 5(a+3) \\ &= a^2 + 6a + 9 + 5a + 15 \\ &= a^2 + 11a + 24 \end{aligned}$$

$$\begin{aligned} g(a+3) &= -3(a+3) + 2 \\ &= -3a - 9 + 2 \\ &= -3a - 7 \end{aligned}$$

$$= a^2 + 11a + 24 - (-3a - 7)$$

$$= a^2 + 11a + 24 + 3a + 7$$

$$= a^2 + 14a + 31$$

Consolidation

Function Creation: Use Your Imagination!

Create a function, $h(x)$.

Using your function, determine

a) $h(3)$

b) $h(-7)$

c) $h(a + 1)$

d) $h(a)$

e) $h(3 - 7x)$

f) The value of x when $h(x) = 1$

Consolidation

Homework!

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