

Aim: Writing Functions

Do Now

Evaluate the following functions

1. $g(x) = x^2 + 4x - 3$, for $g(-3)$

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

$$= 9 - 12 - 3$$

$$= -3 - 3$$

$$= -6$$

2. $f(x) = 5x - 4$, for $f(x) = 11$

$$11 = 5x - 4$$

$$11 + 4 = 5x - 4 + 4$$

$$15 = 5x$$

$$\frac{15}{5} = \frac{5x}{5}$$

$$x = 3$$

Dec 12-9:40 AM

Operations with Functions

Just as you can perform operations with numbers, you can perform operations with functions.

EX: Given $f(x) = 3x - 1$ and $g(x) = -2x + 2$, find $h(x) = f(x) + g(x)$.

$h(x) = f(x) + g(x)$ Write the general form of $h(x)$

$h(x) = (3x - 1) + (-2x + 2)$ Substitute the rules for $f(x)$ and $g(x)$

$h(x) = 3x - 2x - 1 + 2$ Combine like terms

$h(x) = x + 1$ Simplify

Dec 12-9:44 AM

1. Given $f(x) = 2x + 4$ and $g(x) = -4x - 3$, find $h(x) = f(x) + g(x)$.

$$h(x) = f(x) + g(x)$$

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

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

$$h(x) = -2x + 1$$

2. Given $f(x) = 3x - 5$ and $g(x) = 5x - 1$, find $h(x) = f(x) - g(x)$.

$$h(x) = f(x) - g(x)$$

$$h(x) = (3x - 5) - (5x - 1)$$

$$h(x) = 3x - 5 - 5x + 1$$

$$h(x) = -2x - 4$$

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3. Given $f(x) = 5$ and $g(x) = -\frac{1}{5}x - 2$, find $h(x) = f(x) \cdot g(x)$.

$$h(x) = f(x) \cdot g(x)$$

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

$$h(x) = -1x - 10$$

4. Given $f(x) = 3$, $g(x) = x + 2$, and $h(x) = x$, find $k(x) = f(x) \cdot [g(x) + h(x)]$.

$$k(x) = 3 [x + 2 + x]$$

$$k(x) = 3 [2x + 2]$$

$$k(x) = 6x + 6$$

Dec 12-10:03 AM

5. Over time, the enrollment at one high school in a city can be modeled by $f(t) = 32t + 1255$. The enrollment at the city's other high school can be modeled by $g(t) = 27t + 1380$. Write a rule for the total enrollment as a function of time.

$$h(t) = f(t) + g(t)$$

$$h(t) = 32t + 1255 + 27t + 1380$$

$$h(t) = 59t + 2635$$

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6. The function $f(x) = 50x + 6500$ represents the amount of money in a bank account over time. The function $g(x) = -25x + 9300$ represents the amount of money in another account over time. Write a rule for the difference in the amounts of money between the two accounts over time.

$$h(x) = f(x) - g(x)$$

$$h(x) = (50x + 6500) - (-25x + 9300)$$

$$h(x) = 50x + 6500 + 25x - 9300$$

$$h(x) = 75x - 2800$$

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6.2 operations with functions.notebook

December 18, 2014

7. For the initial year of soccer camp, 44 girls and 56 boys enrolled. Each year thereafter, 5 more girls and 8 more boys enrolled in the camp. Let t be the time (in years) since the camp opened. Write a rule for each of the following functions:

- $g(t)$, the number of girls enrolled as a function of time t

- $b(t)$, the number of boys enrolled as a function of time t

- $T(t)$, the total enrollment as a function of time t

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8. For the soccer camp in the previous example, the cost per child each year was \$200. Let t be the time (in years) since the camp opened. Write a rule for each of the following functions:

- $C(t)$, the cost per child of the camp as a function of t

- $R(t)$, the revenue generated by the total enrollment as a function of t

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