Do Now

1. Find the value of x for the function f(x) = 5x - 4,

if
$$f(x) = 11$$
 $1 = 5x - 4$ $(3,11)$ $15 = 5x$ $3 = x$

2. Simplify the expression: (x+3) - (2x + 1)

$$\frac{x+3-2x-1}{-x+2}$$

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Homework Answers

- 1 a. 3
 - **b**. -5
 - **c**. -1
- 2.a. $\frac{1}{4}$
 - **b**. 0
 - C. $\frac{-1}{4}$

- 3. a. f(1) = 4 f(5)= -2f(-3) = -4 f(0) = 2
 - **b.** f(x)=0 f(x)=2 x=-1 & 4 x=0 & 3
 - c. Largest output = 4
 - when x = 1

Operations with Functions

Just as you can perform operations with numbers, you can perform operations with Add, Sub, Multi, Bride, Square functions.

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

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

Write the general form of h(x)

$$h(x) = (3x - 1) + (-2x + 2)$$

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

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

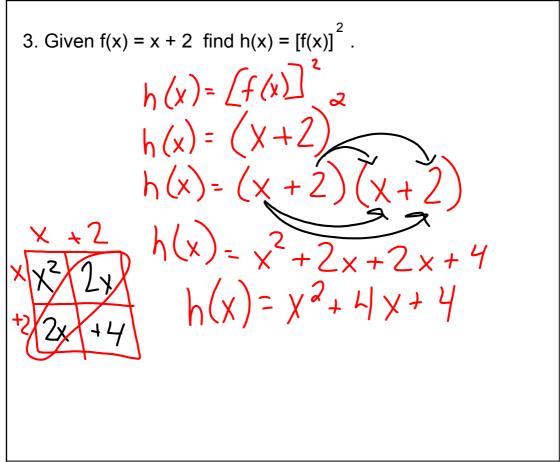
$$h(x) = f(x) - g(x)$$

 $h(x) = (3x-5) - (5x-1)$
 $h(x) = 3x-5-5x+1$
 $h(x) = -2x-4$

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

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

 $h(x) = 5(-5x-2)$
 $h(x) = -x-10$



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

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

$$k(x) = 3 \cdot ((x+2) + (x))$$

$$k(x) = 3 \cdot (2x + 2)$$

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

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.

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

 $h(t) = (3at + 1a55) + (a7t + 1386)$
 $h(t) = 59t + 2635$

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- 6. 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 g(t) = 444 + 5t
 - b(t), the number of boys enrolled as a function of time t

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

$$T(t) = g(t) + b(t)$$

 $T(t) = (44+5t) + (56+8t)$
 $T(t) = 13t + 100$

- 7. 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

$$(4) = 200$$

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

$$R(t) = C(t)(T(t))$$

 $R(t) = 200(13t + 100)$
 $R(t) = 2600t + 20000$

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Operations with Functions

Homework

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