

Name: _____

Date: _____

Combining Functions

Examples:

Given the functions

$$f(x) = 6x^2 - 3x + 5 \quad \text{and} \quad g(x) = 4x^2 + 5x - 8$$

* Distribute the negative

1. Find $f(x) + g(x)$

$$(6x^2 - 3x + 5) + (4x^2 + 5x - 8)$$

$$\boxed{10x^2 + 2x - 3}$$

2. Find $g(x) - f(x)$

$$(4x^2 + 5x - 8) - (6x^2 - 3x + 5)$$

$$4x^2 + 5x - 8 + -6x^2 + 3x - 5$$

$$\boxed{-2x^2 + 8x - 13}$$

Given the functions

$$f(x) = 6x^2 - x + 3 \quad \text{and} \quad g(x) = x^2 + 3x$$

3. Find $2f(x)$

$$2(6x^2 - x + 3)$$

$$\boxed{12x^2 - 2x + 6}$$

4. Find $3g(x)$

$$3(x^2 + 3x)$$

$$\boxed{3x^2 + 9x}$$

5. $2f(x) + 3g(x)$

$$(12x^2 - 2x + 6) + (3x^2 + 9x) = \boxed{15x^2 + 7x + 6}$$

Given the functions

$$f(x) = 2x - 4 \quad \text{and} \quad g(x) = x - 3$$

6. Find $f(x) \cdot g(x)$

$$(2x - 4)(x - 3)$$

$$2x^2 - 6x - 4x + 12$$

$$2x^2 - 10x + 12$$

* FOIL

* BOX

7. Find $2g(x) \cdot f(x)$

$$2(x - 3)(2x - 4)$$

$$(2x - 6)(2x - 4)$$

$$4x^2 - 8x - 12x + 24$$

$$\boxed{4x^2 - 20x + 24}$$

Given the functions $f(x) = 4x^2 - 2x + 5$ and $g(x) = x^2 + 7x - 8$

8. Find $f(x) + g(x)$

$$5x^2 + 5x - 3$$

9. Find $4g(x) - f(x)$

$$4x^2 + 28x - 32 - 4x^2 + 2x - 5$$

$$30x - 37$$

6. $f(2) + g(3)$

$$f(2) = 17$$

$$g(3) = 22$$

$$39$$

7. $g(-1) - f(-2)$

$$g(-1) = (-1)^2 + 7(-1) - 8$$
$$= -14$$

$$f(-2) = 4(-2)^2 - 2(-2) + 5$$
$$= 25$$

$$-14 - 25$$

$$= -39$$