

Algebra: Function Operations

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Name: _____ Date: _____ Score: _____

DIRECTIONS Perform the indicated operation on the functions. Simplify your answer completely.**1** Find $(f+g)(x)$:

$$f(x)=2x+3, g(x)=x-1$$

Answer: _____

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

$$f(x)=2x+3, g(x)=x-1$$

Answer: _____

3 Find $(fg)(x)$:

$$f(x)=x+2, g(x)=x-2$$

Answer: _____

4 Find $(f/g)(x)$:

$$f(x)=x^2-9, g(x)=x+3$$

Answer: _____

5 Find $(f+g)(3)$:

$$f(x)=x^2, g(x)=4x$$

Answer: _____

6 Find $(f-g)(2)$:

$$f(x)=x^2, g(x)=4x$$

Answer: _____

7 Find $(fg)(1)$:

$$f(x)=3x, g(x)=x+4$$

Answer: _____

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

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

Answer: _____

9 Find $(f-g)(x)$:

$$f(x)=4x+5, g(x)=x^2-2$$

Answer: _____

10 Find $(fg)(x)$:

$$f(x)=2x, g(x)=x^2+3$$

Answer: _____

Answer Key & Solutions

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TEACHER NOTES

For $(f+g)(x)$ add, $(f-g)(x)$ subtract, $(fg)(x)$ multiply, $(f/g)(x)$ divide. State any domain restrictions for division.

1 $f(x)=2x+3$, $g(x)=x-1$; $(f+g)(x)$
 $= 3x + 2$

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

2 $f(x)=2x+3$, $g(x)=x-1$; $(f-g)(x)$
 $= x + 4$

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

3 $f(x)=x+2$, $g(x)=x-2$; $(fg)(x)$
 $= x^2 - 4$

$$(x+2)(x-2) = x^2-4 \text{ (diff of squares)}$$

4 $f(x)=x^2-9$, $g(x)=x+3$; $(f/g)(x)$
 $= x - 3$

$$(x+3)(x-3)/(x+3) = x-3, x \neq -3$$

5 $f(x)=x^2$, $g(x)=4x$; $(f+g)(3)$
 $= 21$

$$f(3)+g(3) = 9+12 = 21$$

6 $f(x)=x^2$, $g(x)=4x$; $(f-g)(2)$
 $= -4$

$$f(2)-g(2) = 4-8 = -4$$

7 $f(x)=3x$, $g(x)=x+4$; $(fg)(1)$
 $= 15$

$$f(1) \times g(1) = 3 \times 5 = 15$$

8 $f(x)=x^2+1$, $g(x)=2x-3$; $(f+g)(x)$
 $= x^2 + 2x - 2$

$$x^2+1+2x-3 = x^2+2x-2$$

9 $f(x)=4x+5$, $g(x)=x^2-2$; $(f-g)(x)$
 $= -x^2 + 4x + 7$

$$4x+5-(x^2-2) = -x^2+4x+7$$

10 $f(x)=2x$, $g(x)=x^2+3$; $(fg)(x)$
 $= 2x^3 + 6x$

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