Arithmetic Operations with Functions

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

For the pair of functions, find the indicated sum, difference, product, or quotient.

1) $f(x) = 5 - 5x$, $g(x) = -3x^2 + 5$ 1) _____
   Find $(f + g)(x)$.
   A) $-3x^2 - 5x + 10$ B) $-8x^2 - 5x + 10$
   C) $-3x^2 + 5$ D) $-8x + 10$

2) $f(x) = 8x + 1$, $g(x) = 4x - 2$ 2) _____
   Find $(fg)(x)$.
   A) $32x^2 - 12x - 2$ B) $32x^2 - 2$ C) $12x^2 - 12x - 1$ D) $32x^2 + 2x - 2$

3) $f(x) = \sqrt{6x - 9}$, $g(x) = \dfrac{1}{x}$ 3) _____

   Find $\left(\dfrac{f}{g}\right)(x)$.

   A) $\dfrac{\sqrt{6x - 9}}{x}$ B) $x\sqrt{6x - 9}$ C) $\dfrac{1}{x\sqrt{6x - 9}}$ D) $\dfrac{x}{\sqrt{6x - 9}}$

For the given functions f and g, find the requested function and state its domain.

4) $f(x) = 4x - 7$; $g(x) = 8x - 5$ 4) _____
   Find $f - g$.
   A) $(f - g)(x) = 4x + 2$; all real numbers   B) $(f - g)(x) = -4x - 12$; $\{x \mid x \neq -3\}$
   C) $(f - g)(x) = 12x - 12$; $\{x \mid x \neq 1\}$ D) $(f - g)(x) = -4x - 2$; all real numbers

5) $f(x) = 4x + 5$; $g(x) = 2x - 1$ 5) _____

   Find $\dfrac{f}{g}$.

   A) $\left(\dfrac{f}{g}\right)(x) = \dfrac{2x - 1}{4x + 5}$; $\{x \mid x \neq \dfrac{1}{2}\}$ B) $\left(\dfrac{f}{g}\right)(x) = \dfrac{4x + 5}{2x - 1}$; $\{x \mid x \neq \dfrac{1}{2}\}$

   C) $\left(\dfrac{f}{g}\right)(x) = \dfrac{2x - 1}{4x + 5}$; $\{x \mid x \neq -\dfrac{5}{4}\}$ D) $\left(\dfrac{f}{g}\right)(x) = \dfrac{4x + 5}{2x - 1}$; $\{x \mid x \neq -\dfrac{5}{4}\}$

Evaluate.

6) Find $(f - g)(-2)$ when $f(x) = 4x^2 - 2$ and $g(x) = x - 3$.   6) _____
   A) 15   B) 13   C) -12   D) 19

7) Find $\left(\dfrac{f}{g}\right)(-5)$ when $f(x) = 4x - 2$ and $g(x) = 5x^2 + 14x + 2$.   7) _____

   A) $-\dfrac{22}{57}$ B) $\dfrac{4}{57}$ C) $\dfrac{5}{57}$ D) $\dfrac{5}{18}$

8) Find $(fg)(2)$ when $f(x) = x - 6$ and $g(x) = -3x^2 + 11x - 7$.   8) _____
   A) -152   B) 24   C) -12   D) -76

Answer Key
Testname: ARITHMETIC OPERATIONS WITH FUNCTIONS

1) A
2) A
3) B
4) D
5) B
6) D
7) A
8) C