

6-6

Practice

Form G

Function Operations

Let $f(x) = 4x - 1$ and $g(x) = 2x^2 + 3$. Perform each function operation and then find the domain.

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

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

3. $(g - f)(x)$

4. $(f \cdot g)(x)$

5. $\frac{f}{g}(x)$

6. $\frac{g}{f}(x)$

Let $f(x) = 2x$ and $g(x) = \sqrt{x} - 1$. Perform each function operation and then find the domain of the result.

7. $(f + g)(x)$

8. $(f - g)(x)$

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

10. $(f \cdot g)(x)$

11. $\frac{f}{g}(x)$

12. $\frac{g}{f}(x)$

Let $f(x) = -3x + 2$, $g(x) = \frac{x}{5}$, $h(x) = -2x^2 + 9$, and $j(x) = 5 - x$. Find each value or expression.

13. $(f \circ j)(3)$

14. $(j \circ h)(-1)$

15. $(h \circ g)(-5)$

16. $(g \circ f)(a)$

17. $f(x) + j(x)$

18. $f(x) - h(x)$

19. $(g \circ f)(-5)$

20. $(f \circ g)(-2)$

21. $3f(x) + 5g(x)$

22. $g(f(2))$

23. $g(f(x))$

24. $f(g(1))$

25. A video game store adds a 25% markup on each of the games that it sells. In addition to the manufacturer's cost, the store also pays a \$1.50 shipping charge on each game.

- Write a function to represent the price $f(x)$ per video game after the store's markup.
- Write a function $g(x)$ to represent the manufacturer's cost plus the shipping charge.
- Suppose the manufacturer's cost for a video game is \$13. Use a composite function to find the cost at the store if the markup is applied after the shipping charge is added.
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