

5.5 Extra Practice

In Exercises 1–4, find $(f + g)(x)$ and $(f - g)(x)$ and state the domain of each. Then evaluate $f + g$ and $f - g$ for the given value of x .

1. $f(x) = -\frac{1}{2}\sqrt[3]{x}$, $g(x) = \frac{9}{2}\sqrt[3]{x}$; $x = -1000$

2. $f(x) = -x^2 - 3x + 8$, $g(x) = 6x - 3x^2$; $x = -1$

3. $f(x) = 4x^3 + 12$, $g(x) = 2x^2 - 3x^3 + 9$; $x = 2$

4. $f(x) = 5\sqrt[4]{x} + 1$, $g(x) = -3\sqrt[4]{x} - 2$; $x = 1$

In Exercises 5–8, find $(fg)(x)$ and $\left(\frac{f}{g}\right)(x)$ and state the domain of each. Then evaluate fg and $\frac{f}{g}$ for the given value of x .

5. $f(x) = -x^3$, $g(x) = 2\sqrt[3]{x}$; $x = -64$

6. $f(x) = 12x$, $g(x) = 11x^{1/2}$; $x = 4$

7. $f(x) = 0.25x^{1/3}$, $g(x) = -4x^{3/2}$; $x = 1$

8. $f(x) = 36x^{7/4}$, $g(x) = 4x^{1/2}$; $x = 16$

9. The growth of mold in Specimen A can be modeled by $A(t) = \frac{5}{6}t^{2/3}$. The growth of mold in Specimen B can be modeled by $B(t) = \frac{1}{3}t^{2/3}$.

a. Find $(A - B)(t)$.

b. Explain what $(A - B)(t)$ represents.

10. For the functions f and g , $(f + g)(-3) = -6$ and $\left(\frac{f}{g}\right)(-3) = -\frac{3}{4}$. Find $f(-3)$ and $g(-3)$.