

## 5.4 Problem Set

A

- Let  $f(x) = 2x - 1$  and  $g(x) = x^2 + 1$ . Find
  - $(f + g)(5)$
  - $(f - g)(3)$
  - $(fg)(2)$
  - $(f/g)(4)$
  - $(f \circ g)(2)$
- Let  $f(x) = \frac{x-2}{x+1}$  and  $g(x) = x^2 - x - 2$ . Find
  - $(f + g)(2)$
  - $(f - g)(5)$
  - $(fg)(102)$
  - $(f/g)(99)$
  - $(f \circ g)(1)$
- Let  $f(x) = \frac{2x^2 - x - 3}{x - 2}$  and  $g(x) = x^2 - x - 2$ . Find
  - $(f + g)(-1)$
  - $(f - g)(2)$
  - $(fg)(9)$
  - $(f/g)(102)$
  - $(f \circ g)(0)$
- Let  $f = \{(0, 1), (1, 4), (2, 7), (3, 10)\}$  and  $g = \{(0, -3), (1, -1), (2, 1), (3, 3)\}$ . Find
  - $(f + g)(1)$
  - $(f - g)(3)$
  - $(fg)(2)$
  - $(f/g)(0)$
  - $(f \circ g)(2)$
- Let  $f = \{(5, 3), (6, 2), (7, 9), (8, 12)\}$  and  $g = \{(5, 8), (6, 5), (7, 4), (8, 3)\}$ . Find
  - $(f + g)(6)$
  - $(f - g)(7)$
  - $(fg)(5)$
  - $(f/g)(8)$
  - $(f \circ g)(6)$
- Let  $f = \{(5, 9), (10, 29), (15, 39), (20, 49)\}$  and  $g = \{(5, 4), (10, 5), (15, 6), (20, 9)\}$ . Find
  - $(f + g)(10)$
  - $(f - g)(5)$
  - $(fg)(15)$
  - $(f/g)(20)$
  - $(f \circ g)(10)$

- Let  $f(x) = 2x - 3$  and  $g(x) = x^2 + 1$ . Find
  - $(f + g)(x)$
  - $(f - g)(x)$
  - $(fg)(x)$
  - $(f/g)(x)$
- Let  $f(x) = \frac{x-2}{x+1}$  and  $g(x) = x^2 - x - 2$ . Find
  - $(f + g)(x)$
  - $(f - g)(x)$
  - $(fg)(x)$
  - $(f/g)(x)$

In Problems 9–12, let  $f(x) = \frac{2x^2 - x - 3}{x - 2}$  and  $g(x) = x^2 - x - 2$ . Find:

- $(f + g)(x)$
- $(f - g)(x)$
- $(fg)(x)$
- $(f/g)(x)$

In Problems 13–16, let  $f(x) = 4x + 1$  and  $g(x) = x^3 + 3$ . Find:

- $(f + g)(x)$
- $(f - g)(x)$
- $(fg)(x)$
- $(f/g)(x)$

In Problems 17–20, let  $f(x) = x^3 - 1$  and  $g(x) = x - 1$ . Find:

- $(f + g)(x)$
- $(f - g)(x)$
- $(fg)(x)$
- $(f/g)(x)$

In Problems 21–26, express  $f$  as a composition of two functions  $u$  and  $g$  so that  $f(x) = g[u(x)]$ .

- $f(x) = (2x^2 - 1)^4$
- $f(x) = (3x^2 + 4x - 5)^3$
- $f(x) = \sqrt{5x - 1}$
- $f(x) = \sqrt[4]{x^3 - x + 1}$
- $f(x) = (x^2 - 1)^3 + \sqrt{x^2 - 1} + 5$
- $f(x) = |x + 1|^2 + 6$