Exercises

(1.1) Let g be the doubling function.

  (a) Calculate:

    (i) $g(3)$

    (ii) $g(0)$

    (iii) $g(17)$

    (iv) $g(0.4)$

    (v) $g(-3)$

  (b) Sketch the graph of g.

  (c) Determine the formula for g.

(1.2) Let h be a function that takes a number, quadruples it, and then subtracts 3.

  (a) Calculate:

    (i) $h(5)$

    (ii) $h(0)$

    (iii) $h(0.5)$

    (iv) $h(-1)$

  (b) Determine the formula for h.

(1.3) Let f be a function that takes a number, subtracts three, and then quadruples it.

  (a) Calculate:

    (i) $f(5)$

    (ii) $f(0)$

    (iii) $f(0.5)$

    (iv) $f(-1)$

  (b) Determine a formula for f.

  (c) Compare your answers to those for Exercise 1.2. Are your answers different? Why or why not?

(1.4) Let $g(x) = 3 + x^2$.

  (a) Evaluate the following

    (i) $g(0)$

    (ii) $g(1)$

    (iii) $g(-1)$

    (iv) $g(2)$

    (v) $g(2+1)$

    (vi) $g(g(1))$

  (b) Does $g(2+1) = g(2) + g(1)$? Should it?

  (c) If $g(x) = 7$, what is x?

  (d) If $g(x) = 0$, what is x?

(1.5) Let $f(x) = 2x$.

  (a) Evaluate the following

    (i) $f(0)$

    (ii) $f(1)$

    (iii) $f(2)$

    (iv) $f(2+1)$

    (v) $f(f(0))$

    (vi) $f(f(1))$

  (b) Does $f(2+1) = f(2) + f(1)$? Should it? Compare with Exercise 1.4b. What is the difference between the two situations?

(1.6) Consider the function shown in Fig 1.7. Calculate

  (a) $f(-5)$

  (b) $f(0)$

  (c) $f(5)$

  (d) $f(10)$

(1.7) Consider the function shown in Fig. 1.7.

  (a) If $f(x) = 7$, what is x?

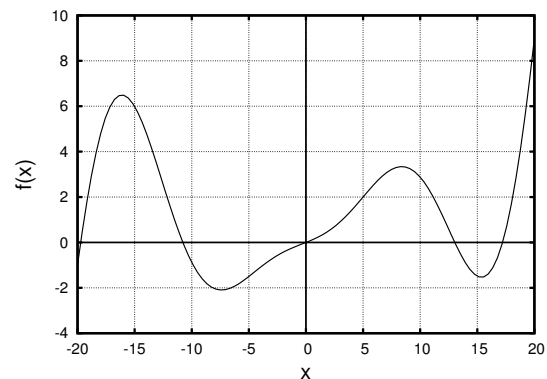 (b) If $f(x) = 2$, what is x?

Fig. 1.7 The function for Exercises 1.6 and 1.7.

(1.8) Describe an everyday, "real life" example of a function. Explain how your example fits the criteria for being a function.