1. Suppose \( f(x) = 3x^2 - 5x + 2 \). Determine the following:
   a.) \( f(-3) \)
   b.) \( f(2x) \)
   c.) \( f(x + h) \)

2. a.) Solve \( y^2 + y = 5x - 2y + 8 \) for \( x \) as a function of \( y \).
   b.) Find the domain for \( x(y) \).

3. a.) Solve \( 3x^3y - 6x + 3y = 7 \) for \( y \) as a function of \( x \).
   b.) Find the domain for \( y(x) \).

4. Find the domain for the following functions:
   a.) \( f(x) = -\frac{1}{3}x + 2 \)
   b.) \( g(x) = x^2 - 4x + 1 \)
   c.) \( s(t) = \sqrt{9 - t^2} \)
   d.) \( k(s) = \frac{1}{s^2 - s} \)

5. Sketch graphs for functions (a), (b), and (c) from problem 4.

6. Use the graphs sketched in problem 5 to determine the range of (a), (b), and (c) from problem 4.

7. Consider the graphs of \( f \) and \( g \) given below.

   a.) Determine the values of \( f(-3) \) and \( g(1) \).
   b.) For what value(s) of \( x \) is \( f(x) = g(x) \)?
8. Factor the following quadratic equations and determine their roots.
   a.) \( x^2 + 2x - 15 \)
   b.) \( x^2 - 36 \)
   c.) \( 3x^2 - 20x - 7 \)

9. Graph \( y = f(x) \), where \( f(x) = \begin{cases} 3x - 3 & x < 2 \\ \frac{1}{2}x^2 & 2 \leq x \leq 4 \\ 4 & x > 4 \end{cases} \)
   (Hint: You may want to find \( f(-1), f(0), f(1), f(2), \) etc.)

10. Find the equation of the line going through the points \((-1, -2)\) and \((1, 1)\):
    a.) in point-slope form.
    b.) in slope-intercept form.

11. Let \( f(x) = -7(2x + 1) \) and \( g(x) = -3x(x - 2) \). Determine the point(s) of intersection of \( f(x) \) and \( g(x) \), and write them in the form \((x, y)\).

12. A ladder is 13 feet long. One end of the ladder is on the ground, and the other end rests on a vertical wall. How far is the base of the ladder from the wall when the top of the ladder is 12 feet from the ground?

13. A man is six feet tall, and he stands a distance of 10 feet from a lightpost. If the top of the light is 12 feet from the ground, how long is the man’s shadow?

14. Recall that the distance formula is \( \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \). Find the distance between the points \((-2, 0)\) and \((7, 4)\).

15. Suppose that \( f(x) = \sqrt{x^2 - 1} \). Write a simplified expression for \( \frac{f(2 + h) - f(2)}{h} \cdot \frac{f(2 + h) + f(2)}{h} \).