

1. 10 pts. Find $f(-4)$ and $f(-x)$ for

$$f(x) = -2x^2 + x - 3$$

2. 10 pts. each Find the domain of each function.

(a) $g(x) = \frac{x + 5}{4 - 4x^2}$

(b) $h(t) = \frac{\sqrt{-t - 3}}{3t - 15}$

3. 10 pts. each Let

$$f(x) = 1 + \frac{1}{2x} \quad \text{and} \quad g(x) = \frac{1}{x - 6}.$$

(a) Find $(f \cdot g)(x)$ and its domain.

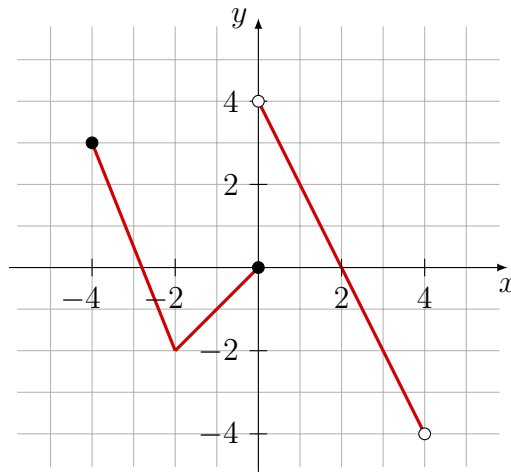
(b) Find $\left(\frac{f}{g}\right)(x)$ and its domain.

4. 5 pts. each Determine algebraically whether the function is even, odd, or neither.

(a) $f(x) = -3x^2 - 5$

(b) $g(x) = \frac{-x^3}{3x^2 - 9}$

5. 10 pts. A piecewise-defined function f has graph below. Write a definition for f .



6. A wire 10 meters long is to be cut into two pieces. One piece will be shaped as an equilateral triangle, and the other piece will be shaped as a circle.

- (a) 10 pts. Express the total area A enclosed by the pieces of wire as a function of the length x of a side of the equilateral triangle.
- (b) 5 pts. What is the domain of A ?

7. 10 pts. Find the zeros of

$$F(x) = 2x^2 - 3x - 1.$$

What are the x -intercepts of the graph of the function?

8. 10 pts. Find the complex zeros of

$$h(x) = 2x^2 + 2x + 1.$$

9. 10 pts. Solve the inequality $x(x - 7) > 8$, giving the solution set in interval notation.

10. A farmer has 3000 meters of fencing available to enclose a rectangular field.

- (a) 10 pts. Express the area A of the rectangle as a function of x , where x is the length of the rectangle.
- (b) 5 pts. For what value of x is the area greatest?
- (c) 5 pts. What is the maximum area?

11. 10 pts. Solve the equation $|1 - 3t| + 7 = 11$.

12. 10 pts. Solve the inequality $5 - |y - 1| < -20$.