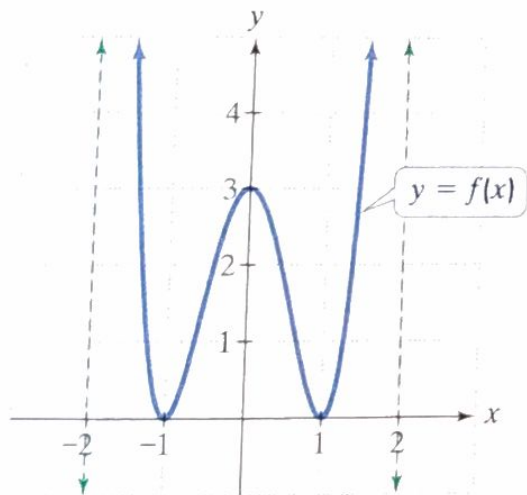# CUMULATIVE REVIEW EXERCISES (CHAPTERS 1–3)

Use the graph of $y = f(x)$ to solve Exercises 1–6.

1. Find the domain and the range of f.

2. Find the zeros and the least possible multiplicity of each zero.

3. Where does the relative maximum occur?

4. Find $(f \circ f)(-1)$.

5. Use arrow notation to complete this statement: $f(x) \to \infty$ as _____ or as _____.

6. Graph $g(x) = f(x + 2) + 1$.

In Exercises 7–12, solve each equation or inequality.

7. $|2x - 1| = 3$

8. $3x^2 - 5x + 1 = 0$

9. $9 + \dfrac{3}{x} = \dfrac{2}{x^2}$

10. $x^3 + 2x^2 - 5x - 6 = 0$

11. $|2x - 5| > 3$

12. $3x^2 > 2x + 5$

In Exercises 13–18, graph each equation in a rectangular coordinate system. If two functions are given, graph both in the same system.

13. $f(x) = x^3 - 4x^2 - x + 4$

14. $f(x) = x^2 + 2x - 8$

15. $f(x) = x^2(x - 3)$

16. $f(x) = \dfrac{x - 1}{x - 2}$

17. $f(x) = |x|$ and $g(x) = -|x| - 1$

18. $x^2 + y^2 - 2x + 4y - 4 = 0$

In Exercises 19–20, let $f(x) = 2x^2 - x - 1$ and $g(x) = 4x - 1$.

19. Find $(f \circ g)(x)$.

20. Find $\dfrac{f(x + h) - f(x)}{h}$.