

4.1 Extra Practice

In Exercises 1–4, determine whether the function is a polynomial function. If so, write it in standard form and state its degree, type, and leading coefficient.

1. $f(x) = 2x^2 - 3x^4 + 6x + 1$

2. $m(x) = -\frac{3}{7}x^3 + \frac{7}{x} - 3$

3. $g(x) = \sqrt{15}x + \sqrt{5}$

4. $p(x) = -2\sqrt{3} + 3x - 2x^2$

In Exercises 5 and 6, evaluate the function for the given value of x .

5. $h(x) = -x^3 - 2x^2 - 3x + 4; x = 2$

6. $g(x) = x^4 - 32x^2 + 256; x = -4$

In Exercises 7 and 8, describe the end behavior of the function.

7. $f(x) = -3x^6 + 4x^2 - 3x + 6$

8. $f(x) = \frac{4}{5}x^2 + 6x + 3x^5 - 3x^3 - 2$

In Exercises 9 and 10, graph the polynomial function.

9. $p(x) = 16 - x^4$

10. $g(x) = x^2 + 3x^5 - x$

11. Sketch a graph of the polynomial function f with the following characteristics.

- f is increasing when $x < -1$ and $0 < x < 1$.
- f is decreasing when $-1 < x < 0$ and $x > 1$.
- $f(x) < 0$ for all real numbers.

Use the graph to describe the degree and leading coefficient of f .

12. A cubic polynomial function g has a leading coefficient of -3 and a constant term of 7 . When $g(-2) = 67$ and $g(1) = 13$, what is $g(6)$? Explain your reasoning.