Graph the polynomial function.

9. $f(x) = x^4 + 6x^2 - 3$ **10.** $f(x) = -x^3 + x^2 + x - 1$ **11.** $f(x) = 4 - 2x^3$

12. WHAT IF? If wind speed is measured in miles per hour, the model in Example 6 becomes $E = 0.0051s^4$. Graph this model. What wind speed is needed to generate a wave with 2000 foot-pounds of energy per square foot?

5.2 EXERCISES

SKILL PRACTICE

1. VOCABULARY Identify the degree, type, leading coefficient, and constant term of the polynomial function $f(x) = 6 + 2x^2 - 5x^4$.

2. WRITING *Explain* what is meant by the end behavior of a polynomial function.

EXAMPLE 1
on p. 337
for Exs. 3–8

POLYNOMIAL FUNCTIONS Decide whether the function is a polynomial function. If so, write it in standard form and state its degree, type, and leading coefficient.

3. $f(x) = 8 - x^2$

4. $f(x) = 6x + 8x^4 - 3$

5. $g(x) = \pi x^4 + \sqrt{6}$

6. $h(x) = x^3\sqrt{10} + 5x^{-2} + 1$

7. $h(x) = -\dfrac{5}{2}x^3 + 3x - 10$

8. $g(x) = 8x^3 - 4x^2 + \dfrac{2}{x}$

EXAMPLE 2
on p. 338
for Exs. 9–14

DIRECT SUBSTITUTION Use direct substitution to evaluate the polynomial function for the given value of x.

9. $f(x) = 5x^3 - 2x^2 + 10x - 15; x = -1$

10. $f(x) = 8x + 5x^4 - 3x^2 - x^3; x = 2$

11. $g(x) = 4x^3 - 2x^5; x = -3$

12. $h(x) = 6x^3 - 25x + 20; x = 5$

13. $h(x) = x + \dfrac{1}{2}x^4 - \dfrac{3}{4}x^3 + 10; x = -4$

14. $g(x) = 4x^5 + 6x^3 + x^2 - 10x + 5; x = -2$

EXAMPLE 3
on p. 338
for Exs. 15–23

SYNTHETIC SUBSTITUTION Use synthetic substitution to evaluate the polynomial function for the given value of x.

15. $f(x) = 5x^3 - 2x^2 - 8x + 16; x = 3$

16. $f(x) = 8x^4 + 12x^3 + 6x^2 - 5x + 9; x = -2$

17. $g(x) = x^3 + 8x^2 - 7x + 35; x = -6$

18. $h(x) = -8x^3 + 14x - 35; x = 4$

19. $f(x) = -2x^4 + 3x^3 - 8x + 13; x = 2$

20. $g(x) = 6x^5 + 10x^3 - 27; x = -3$

(21.) $h(x) = -7x^3 + 11x^2 + 4x; x = 3$

22. $f(x) = x^4 + 3x - 20; x = 4$

23. ERROR ANALYSIS *Describe* and correct the error in evaluating the polynomial function $f(x) = -4x^4 + 9x^2 - 21x + 7$ when $x = -2$.

-2	-4	9	-21	7
		8	-34	110
	-4	17	-55	117

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