Name _____ Date _____

LESSON 5.7

Practice C

For use with pages 379–386

Find all the zeros of the polynomial function.

1. $f(x) = x^4 + 4x^3 - 6x^2 - 36x - 27$

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

3. $g(x) = 2x^5 - 4x^4 - 2x^3 + 28x^2$

4. $g(x) = 2x^4 - x^3 - 42x^2 + 16x + 160$

5. $h(x) = 2x^4 - 7x^3 - 27x^2 + 63x + 81$

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

7. $g(x) = x^4 + 2x^3 + 2x - 1$
(*Hint:* $-i$ is a zero.)

8. $h(x) = x^4 - 2x^3 + 14x^2 + 6x - 5$
(*Hint:* $1 + 4i$ is a zero.)

Write a polynomial function *f* of least degree that has rational coefficients, a leading coefficient of 2, and the given zeros.

9. $-4, 0, 2, 4$

10. $2i, -2i, 5i, -5i$

11. $-5, \sqrt{3}$

12. $0, 3 + 4i$

13. $1, 2, 4 + \sqrt{2}$

14. $0, 3, i, 5 - 2i$

Determine the possible numbers of positive real zeros, negative real zeros, and imaginary zeros for the function.

15. $h(x) = x^3 - 4x^2 + 5x + 9$

16. $g(x) = x^4 + 3x^2 - 10x + 16$

17. $f(x) = x^5 - 6x^4 - 3x^3 + 7x^2 - 8x + 1$

18. $g(x) = x^{10} - x^8 + x^6 - x^4 + x^2 - 1$

19. $f(x) = x^6 + 2x^5 - 12x^4 - x^3 + 7x^2 + 5x - 16$

Use a graphing calculator to graph the function. Then use the *zero* (or *root*) feature to approximate the real zeros of the function.

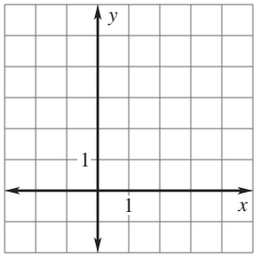
20. $g(x) = x^4 + 3x^2 - 2$

21. $h(x) = x^5 + 12x^3 - 4x^2 + 16x + 25$

22. $f(x) = -x^6 + 4x^5 - 2x^2 + 9$

23. $g(x) = 3x^6 + 5x^5 - 30x^4 - 37x^3 - 25x^2$

24. **Critical Thinking** The graph of a polynomial of degree 5 has four distinct x-intercepts. What can be said about one of its zeros? Sketch a graph of this situation.



25. **Critical Thinking** Find a counterexample to disprove the following statement.

The polynomial function of least degree with integer coefficients and zeros at $x = -4$, $x = 2$, and $x = 5$, is unique.

26. **College Tuition** For 1998 through 2005, the enrollment E and cost of tuition T (in dollars) can be modeled by

$E = -29.881t^2 + 190t + 4935$ and $T = 10.543t^3 - 118.83t^2 + 921t + 9979$

where t is the number of years since 1998.

a. Write a model that represents the total tuition R brought in by the college in a given year.

b. In which year did the college take in \$62,638,000 in tuition?