

# Practice 6-6

## The Fundamental Theorem of Algebra

Find all the zeros of each function.

1.  $y = 5x^3 - 5x$

2.  $f(x) = x^3 - 16x$

3.  $g(x) = 12x^3 - 2x^2 - 2x$

4.  $y = 6x^3 + x^2 - x$

5.  $f(x) = 5x^3 + 6x^2 + x$

6.  $y = -4x^3 + 100x$

For each equation, state the number of complex roots, the possible number of real roots, and the possible rational roots.

7.  $2x^2 + 5x + 3 = 0$

8.  $3x^2 + 11x - 10 = 0$

9.  $2x^4 - 18x^2 + 5 = 0$

10.  $4x^3 - 12x + 9 = 0$

11.  $6x^5 - 28x + 15 = 0$

12.  $x^3 - x^2 - 2x + 7 = 0$

13.  $x^3 - 6x^2 - 7x - 12 = 0$

14.  $2x^4 + x^2 - x + 6 = 0$

15.  $4x^5 - 5x^4 + x^3 - 2x^2 + 2x - 6 = 0$

16.  $7x^6 + 3x^4 - 9x^2 + 18 = 0$

17.  $5 + x + x^2 + x^3 + x^4 + x^5 = 0$

18.  $6 - x + 2x^3 - x^3 + x^4 - 8x^5 = 0$

Find all the zeros of each function.

19.  $f(x) = x^3 - 9x^2 + 27x - 27$

20.  $y = 2x^3 - 8x^2 + 18x - 72$

21.  $y = x^3 - 10x - 12$

22.  $y = x^3 - 4x^2 + 8$

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

24.  $y = x^3 - 2x^2 - 11x + 12$

25.  $g(x) = x^3 + 4x^2 + 7x + 28$

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

27.  $g(x) = x^4 - 5x^2 - 36$

28.  $y = x^4 - 7x^2 + 12$

29.  $y = 9x^4 + 5x^2 - 4$

30.  $y = 4x^4 - 11x^2 - 3$

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