

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## UNIT 2 • POLYNOMIAL FUNCTIONS

### Lesson 3: Graphing Polynomial Functions

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#### Practice 2.3.4: The Rational Root Theorem

For problems 1–4, use the Rational Root Theorem to list all of the possible rational roots for each polynomial equation.

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

2.  $x^3 + 2x^2 + 5x - 9 = 0$

3.  $4x^3 + x^2 + 2x - 1 = 0$

4.  $2x^3 - 6x^2 + 3x + 12 = 0$

For problems 5–8, find all of the solutions of each polynomial equation.

5.  $2x^3 + 11x^2 + 8x - 21 = 0$

6.  $x^3 + 3x^2 + 3x + 9 = 0$

7.  $x^3 - 9x^2 + 22x - 10 = 0$

8.  $9x^4 - 24x^3 - 16x^2 + 20x + 3 = 0$

For problems 9 and 10, find a third-degree polynomial with rational coefficients that has the given numbers as roots.

9.  $-3$  and  $2i$

10.  $4$  and  $3 - \sqrt{2}$