

Row# \_\_\_\_\_

Name \_\_\_\_\_

Period \_\_\_\_\_

$$f(x) = 2x^3 - 9x^2 + 4x + 15$$

1. Number of Complex Roots
2. What does complex Roots mean?
3. Number of Positive Zeros
4. Number of Negative Zeros

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

5. Upper Bound

5. \_\_\_\_\_

6. What does Upper Bound mean?

6. \_\_\_\_\_

7. Lower Bound

7. \_\_\_\_\_

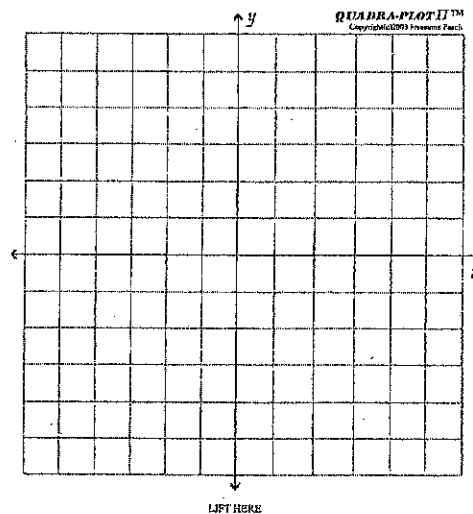
8. What does Lower Bound mean?

8. \_\_\_\_\_

9. Find all of the roots

9. \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

10. Graph  $f(x) = 2x^3 - 9x^2 + 4x + 15$



## Solving By Rational Root Theorem, Factoring, and Quadratic Formula

Find all roots and find all factors

1.  $x^3 - 8x = 0$

4.  $x^4 + 8x^3 + x^2 - 42x = 0$

Row # \_\_\_\_\_

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All Roots: \_\_\_\_\_

All Roots: \_\_\_\_\_

All Factors: \_\_\_\_\_

All Factors: \_\_\_\_\_

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

5.  $x^5 + 3x^4 - 9x^3 - 27x^2 = 0$

All Roots: \_\_\_\_\_

All Roots: \_\_\_\_\_

All Factors: \_\_\_\_\_

All Factors: \_\_\_\_\_

3.  $x^3 - 8x^2 + 29x - 52 = 0$

6.  $x^2 - 20 = 0$

All Roots: \_\_\_\_\_

All Roots: \_\_\_\_\_

All Factors: \_\_\_\_\_

All Factors: \_\_\_\_\_

7.  $x^4 - 3x^3 - 18x^2 - 4x + 24 = 0$

9.  $x^3 - 5x^2 + 2x - 10 = 0$

All Roots: \_\_\_\_\_

All Roots: \_\_\_\_\_

All Factors: \_\_\_\_\_

All Factors: \_\_\_\_\_

8.  $3x^3 + 20x^2 + 7x - 30 = 0$

10.  $x^4 - 6x^3 + 10x^2 - 6x + 9 = 0$

All Roots: \_\_\_\_\_

All Roots: \_\_\_\_\_

All Factors: \_\_\_\_\_

All Factors: \_\_\_\_\_

# SOIVING Rational Equations

Solve and Tell if any Extraneous Roots

NAME \_\_\_\_\_

Name \_\_\_\_\_

Period \_\_\_\_\_

1.  $\frac{x-2}{3} + \frac{x+5}{3} = \frac{1}{3}$

Solution: \_\_\_\_\_

Extraneous Roots: \_\_\_\_\_

2.  $\frac{1}{x} - \frac{2}{x-3} = \frac{4}{1}$

Solution: \_\_\_\_\_

Extraneous Roots: \_\_\_\_\_

6.  $\frac{3}{x+2} + \frac{6}{x^2+2x} = \frac{3-x}{1}$

Solution: \_\_\_\_\_

Extraneous Roots: \_\_\_\_\_

3.  $\frac{x}{1} + \frac{12}{x} = \frac{7}{1}$

Solution: \_\_\_\_\_

Extraneous Roots: \_\_\_\_\_

7.  $\frac{4x}{x+4} + \frac{5}{x-1} = \frac{15}{x^2+3x-4}$

Solution: \_\_\_\_\_

Extraneous Roots: \_\_\_\_\_

4.  $\frac{2}{1} - \frac{1}{x+1} = \frac{1}{x^2+x}$

Solution: \_\_\_\_\_

Extraneous Roots: \_\_\_\_\_

Solution: \_\_\_\_\_

Extraneous Roots: \_\_\_\_\_