

Math Sheet

Name _____ Score _____ / 6 Teacher _____ Date _____

Analyzing and Solving Polynomial Equations

For each equation, analyze possible root counts, sign changes and rational candidates, then solve for every exact root with multiplicity.

1. $x^6 + x^5 - 11x^4 + x^3 - 14x^2 - 2x + 24 = 0$

Complex / possible real-nonreal:

$V(P(x))$ / possible positive:

$V(P(-x))$ / possible negative:

Rational candidates:

Exact roots (with multiplicity):

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

Complex / possible real-nonreal:

$V(P(x))$ / possible positive:

$V(P(-x))$ / possible negative:

Rational candidates:

Exact roots (with multiplicity):

3. $x^3 + 5x^2 + 16x + 80 = 0$

Complex / possible real-nonreal:

$V(P(x))$ / possible positive:

$V(P(-x))$ / possible negative:

Rational candidates:

Exact roots (with multiplicity):

4. $x^6 - 2x^5 - 26x^4 + 50x^3 + 169x^2 - 288x - 144 = 0$

Complex / possible real-nonreal:

$V(P(x))$ / possible positive:

$V(P(-x))$ / possible negative:

Rational candidates:

Exact roots (with multiplicity):

5. $x^2 - 2x - 15 = 0$

Complex / possible real-nonreal:

$V(P(x))$ / possible positive:

$V(P(-x))$ / possible negative:

Rational candidates:

Exact roots (with multiplicity):

6. $x^5 + 6x^4 + 34x^3 + 96x^2 - 16x - 208 = 0$

Complex / possible real-nonreal:

$V(P(x))$ / possible positive:

$V(P(-x))$ / possible negative:

Rational candidates:

Exact roots (with multiplicity):