## Algebra 2

## 4-05 Find All Zeros of Polynomial Functions (4.6)

Rational Zero Theorem	
• Given a polynomial function, the rational zeros will be in the form of where <i>p</i> is a factor of the	(or
constant) term and <i>q</i> is the factor of the coefficient.	
List all the possible rational zeros of $f(x) = 2x^3 + 2x^2 - 3x + 9$	
Use the Rational Zero Theorem and Synthetic Division to Find Zeros of a Polynomial	
To find all the zeros of polynomial functions,	
1. Use the Rational Zero Theorem to all possible rational zeros of the function.	
2. Use division to test a possible zero. If the remainder is 0, it is a zero. The	on
a graph are zeros, so a graph can help you choose which possible zero to test.	
3. Repeat step two using the polynomial with synthetic division. If possible, continue until the	е
depressed polynomial is a	
4. Find the zeros of the function by factoring or the quadratic formula.	
Find all rational zeros of $f(x) = x^3 - 4x^2 - 2x + 20$	
The Fundamental Theorem of Algebra	
• If <i>f</i> ( <i>x</i> ) is a polynomial of degree <i>n</i> > 0, then <i>f</i> ( <i>x</i> ) has complex zero.	

• A polynomial has the same number of \_\_\_\_\_\_ as its \_\_\_\_\_

How many solutions does  $x^4 - 5x^3 + x - 5 = 0$  have? Find all the solutions.

Given a function, find the zeros of the function.  $f(x) = x^4 - 6x^3 + 9x^2 + 6x - 10$ 

## **Complex Conjugate Theorem**

- If the complex number \_\_\_\_\_\_ is a zero, then \_\_\_\_\_\_ is also a zero.
- Complex zeros come in \_\_\_\_\_

## Irrational Conjugate Theorem

If \_\_\_\_\_\_ is a zero, then so is \_\_\_\_\_\_

Worksheet/ebook = 15