

Name:

Date:

Topic:

Class:

Main Ideas/Questions	Notes/Examples	
<b>irrational ZEROS</b>	<b>Directions:</b> Find all zeros. Write all answers in simplest form.	
	1. $f(x) = x^4 - 9x^2 + 18$	2. $f(x) = 4x^4 - 33x^2 + 8$
	3. $f(x) = 2x^3 + 5x^2 - 24x - 60$	4. $f(x) = 3x^3 - 15x^2 - 4x + 20$
	<b>Using the RATIONAL ZERO THEOREM</b>	<b>Directions:</b> List all possible rational zeros. Then, find all the real zeros.
5. $f(x) = x^3 - 2x^2 - 18x + 36$		
6. $f(x) = x^4 + x^3 - 23x^2 - 3x + 60$		

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<b>COMPLEX ZEROS</b>	Just as a polynomial function can have real zeros (rational and/or irrational), it can also have <b>complex zeros</b> . Find all zeros of the polynomial functions below. Simplify all irrational and complex solutions.
	1. $f(x) = x^4 - 4x^2 - 12$
	2. $f(x) = 4x^4 + 31x^2 - 8$
	3. $f(x) = x^4 - 16$
	4. $f(x) = -2x^3 - 16$
	5. $f(x) = x^3 - 2x^2 + x - 2$
6. $f(x) = 3x^3 - 4x^2 + 36x - 48$	

7.  $f(x) = 2x^5 - 5x^4 - 2x + 5$

8.  $f(x) = x^4 + 7x^3 - x - 7$

**Using the  
Rational  
Zero  
Theorem**

**Directions:** List all possible rational zeros. Then, find all zeros.

9.  $f(x) = 2x^3 - 5x^2 + 8x - 20$

10.  $f(x) = x^3 - 2x^2 + 16x + 48$