Name: _____ Date: _____ Period: _____

4.6 The Fundamental Theorem of Algebra DAY TWO CYU

☑ *Use when you get it right all by yourself*

S *Use when you did it all by yourself, but made a silly mistake*

H *Use when you could do it alone with a little help from teacher or peer*

G *Use when you completed the problem in a group*

X *Use when a question was attempted but wrong (get help)*

N *Use when a question was not even attempted*

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Rational Root Theorem		1, 2	
Graphing polynomials on the calculator to sketch		1, 2	
Long/synthetic division		1, 2	
Factoring polynomials		1, 2	
Solving polynomial equations		1, 2	
Descartes' Rule of Signs: chart/table		7, 8	4 - 6
Writing polynomial functions of least degree		3	
Error Analysis with polynomials			

Find all zeros of the polynomial function using the 5 steps from your notes. Show all 5 steps to earn full credit.

1. $g(x) = x^4 + 4x^3 + 7x^2 + 16x + 12$

2. $f(x) = x^5 - 20x^3 + 20x^2 - 21x + 20$

3. REASONING: Two zeros of $f(x) = x^3 - 6x^2 - 16x + 96$ are 4 and – 4. Explain why the third zero must also be a real number.

Using Descartes' Rule of Signs: Determine the possible numbers of positive real zeros, negative real zeros, and imaginary zeros for the functions provided. Create a chart as your answer. Show all work for full credit.

4. $g(x) = x^4 - x^2 - 6$

5. $g(x) = -x^3 + 5x^2 + 12$

6. $g(x) = x^7 + 4x^4 - 10x + 25$

Multiple Choice: REASONING & USING STRUCTURE

7. Which is NOT a possible classification of zeros for $f(x) = x^5 - 4x^3 + 6x^2 + 2x - 6$?

A. Three positive real zeros, two negative real zeros, & zero imaginary zeros
B. Three positive real zeros, zero negative real zeros, & two imaginary zeros
C. One positive real zero, four negative real zeros, & zero imaginary zeros
D. One positive real zero, two negative real zeros, & two imaginary zeros

8. Use Descartes's Rule of Signs to determine which function has at least 1 positive real zero.

A. $f(x) = x^4 + 2x^3 - 9x^2 - 2x - 8$
B. $f(x) = x^4 + 4x^3 + 8x^2 + 16x + 16$
C. $f(x) = -x^4 - 5x^2 - 4$
D. $f(x) = x^4 + 4x^3 + 7x^2 + 12x + 12$

9. MODELING WITH MATHEMATICS: Over a period of 14 years, the number N of inland lakes infested with zebra mussels in a certain state can be modeled by $N = -0.0284x^4 + 0.5937x^3 - 2.464x^2 + 8.33x - 2.5$ where x is time (in years). In which year did the number of infested inland lakes first reach 120? *(HINT: If you use your calculator to find the exact answer, then explain in words what you did to earn you work credit.)*

CYU Reflection: *How far can you go: basic, intermediate, or advanced?*

Rate your mastery level!

How confident are you with the skills this CYU covered? Circle the score you would give yourself.