Name: _____ Date: _____ Period: _____

4.6 The Fundamental Theorem of Algebra DAY ONE 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
Identifying number of solutions	1, 2		
Rational Root Theorem		3, 4	
Graphing polynomials on the calculator to sketch		3, 4	
Long/synthetic division		3, 4	
Factoring polynomials		3, 4	
Solving polynomial equations		3, 4	
Identifying number of imaginary roots		5, 6	
Writing polynomial functions of least degree			7, 8
Error Analysis with polynomials			9, 10

Identify the number of solutions or zeros.

1. $g(s) = 4s^5 - s^3 + 2s^7 - 2$

2. $h(x) = 5x^4 + 7x^8 - x^{12}$

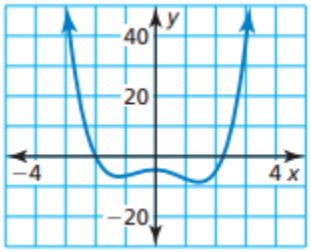
Find all zeros of the polynomial function using the 5 steps from your notes. Show all 5 steps to earn full credit.

3. $f(x) = x^4 - 6x^3 + 7x^2 + 6x - 8$

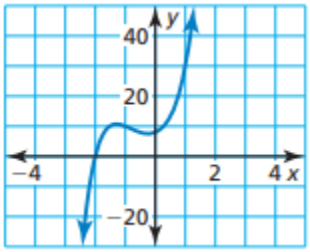
4. $h(x) = x^3 + 5x^2 - 4x - 20$

Describe the number of imaginary zeros for the function with the given degree and graph. Explain your reasoning in words.

5. Degree: 4



6. Degree: 5



Write a polynomial function f of least degree that has rational coefficients, a leading coefficient of 1, and the given zeros.

7. – 5, - 1, 2

8. 3, 4 + *i*

Describe and correct the error in writing a polynomial function with rational coefficients and the given zero(s).

9. Zeros: 2, 1 + *I*

✗

$$\begin{aligned} f(x) &= (x-2)[x-(1+i)] \\ &= x(x-1-i)-2(x-1-i) \\ &= x^2-x-ix-2x+2+2i \\ &= x^2-(3+i)x+(2+2i) \end{aligned}$$

10. Zero: 2 + *i*

✗

$$\begin{aligned} f(x) &= [x-(2+i)][x+(2+i)] \\ &= (x-2-i)(x+2+i) \\ &= x^2+2x+ix-2x-4-2i-ix-2i-i^2 \\ &= x^2-4i-3 \end{aligned}$$

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.