

Name: Key

Date: _____

Period: _____

4.3 Dividing Polynomial Functions 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
Long Division	1	2	3
Synthetic Division	4, 5	6, 7	8, 9
Synthetic Substitution			

Divide using polynomial long division. Show all work for full credit.

1. $(x^3 + x^2 + x + 2) \div (x^2 - 1)$

$$x + 1 + \frac{2x + 3}{x^2 - 1}$$

2. $(7x^3 + x^2 + x) \div (x^2 + 1)$

$$7x + 1 \text{ R } -6x - 1$$

3. $(4x^4 + 5x - 4) \div (x^2 - 3x - 2)$

$$4x^2 + 12x + 44 + \frac{161x + 84}{x^2 - 3x - 2}$$

Divide using synthetic division. Show all work for full credit.

4. $(x^2 + 8x + 1) \div (x - 4)$

$$x + 12 \text{ R } 49$$

5. $(4x^2 - 13x - 5) \div (x - 2)$

$$4x - 5 - \frac{15}{x - 2}$$

6. $(2x^2 - x + 7) \div (x + 5)$

$$2x - 11 + \frac{62}{x + 5}$$

7. $(x^3 - 4x + 6) \div (x + 3)$

$$x^2 - 3x + 5 \text{ R } -9$$

8. $(3x^3 - 5x^2 - 2) \div (x - 1)$

$$3x^2 - 2x - 2 - \frac{4}{x-1}$$

9. $(x^4 + 4x^3 + 16x - 35) \div (x + 5)$

$$x^3 + x^2 - 2x + 1 \text{ R. } -6$$

Use synthetic division to evaluate the function or the indicated value of x . Show all work for full credit.

10. $f(x) = -x^2 - 8x + 30$; $x = -1$

$$f(-1) = 37$$

$$(-1, 37)$$

11. $f(x) = x^3 + x^2 - 3x + 9$; $x = -4$

$$f(-4) = -27$$

$$(-4, -27)$$

12. $f(x) = -x^4 - x^3 - 2$; $f(5)$

$$f(5) = -752$$

$$(5, -752)$$

13. $f(x) = x^4 + 6x^2 - 7x + 1$; $f(3)$

$$f(3) = 115$$

$$(3, 115)$$

14. **COMPARING METHODS** The profit P (in millions of dollars) for a DVD manufacturer can be modeled by $P = -6x^3 + 72x$, where x is the number (in millions) of DVDs produced. Use synthetic division to show that the company yields a profit of \$96 million when 2 million DVDs are produced. Is there an easier method? Explain.

$$R = 96$$

$$P(2) = 96$$

Substitute $x = 2$

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.

