Name _____ Date _____

4.3 PracticeA

In Exercises 1–4, divide using polynomial long division.

1. $(x^2 + x + 12) \div (x - 5)$

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

3. $(x^3 + x^2 - 9x - 6) \div (x^2 - 9)$

4. $(6x^3 - x^2 + 12x) \div (x^2 + 2)$

In Exercises 5–10, divide using synthetic division.

5. $(x^2 + 6x + 1) \div (x - 3)$

6. $(3x^2 - 11x - 4) \div (x - 1)$

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

8. $(x^3 - 2x + 6) \div (x + 3)$

9. $(x^2 + 25) \div (x - 5)$

10. $(5x^2 - 3x + 2) \div (x - 1)$

11. Describe and correct the error in using synthetic division to divide $x^3 + 2x^2 + 7$ by $x + 3$.

✗	3	1	2	0	7
			3	15	45
		1	5	15	52

$$\frac{x^3 + 2x^2 + 7}{x + 3} = x^2 + 5x + 15 + \frac{52}{x + 3}$$

In Exercises 12–15, use synthetic division to evaluate the function for the indicated value of *x*.

12. $f(x) = -x^2 - 7x + 18;\ x = -2$

13. $f(x) = 2x^2 - 3x + 6;\ x = 5$

14. $f(x) = x^3 + 2x^2 - 3x + 4;\ x = -1$

15. $f(x) = x^3 + 2x^2 - 5x + 12;\ x = -3$

16. You divide two polynomials and obtain the result $x^2 - 3 + \frac{6}{x + 1}$. What is the dividend? How did you find it?