Name _____ Class _____ Date _____

Reteaching 11-3

Dividing Polynomials

OBJECTIVE: Dividing polynomials **MATERIALS:** None

The procedure for dividing two polynomials is similar to the one for dividing whole numbers.

If the dividend or the divisor has missing terms, remember to insert these terms with zero coefficients.

Example

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

$$\begin{array}{r} x \\ x - 3\overline{)x^2 - 5x + 8} \\ \underline{x^2 - 3x } \\ -2x + 8 \end{array}$$

← **Think $x\overline{)x^2} = \frac{x^2}{x} = x$.**

← **Multiply $x(x - 3) = x^2 - 3x$.**

← **Subtract $(x^2 - 5x) - (x^2 - 3x) = -2x$, and bring down the 8.**

Repeat the process.

$$\begin{array}{r} x - 2 \\ x - 3\overline{)x^2 - 5x + 8} \\ \underline{x^2 - 3x } \\ -2x + 8 \\ \underline{-2x + 6} \\ 2 \end{array}$$

← **Think $x\overline{)-2x} = \frac{-2x}{x} = -2$.**

← **Multiply $-2(x - 3) = -2x + 6$.**

← **Subtract $(-2x + 8) - (-2x + 6) = 2$. The remainder is 2.**

The answer is $x - 2 + \frac{2}{x - 3}$.

Exercises

Divide.

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

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

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

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

5. $(x^2 - 8x + 16) \div (x - 4)$

6. $(6x^2 + 42x + 60) \div (x + 4)$

7. $(2x^2 - 2x - 24) \div (x + 3)$

8. $(2x^3 + 17x^2 + 38x + 15) \div (x + 5)$

9. $(x^3 + 7x^2 + 8x - 16) \div (x - 2)$

10. $(4x^3 + 22x^2 + 36x + 18) \div (x + 3)$

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