CHAPTER 12: RATIONAL EXPRESSIONS

12.4: Dividing Polynomials

OBJECTIVES

❑ I can divide polynomial by a monomial

❑ I can divide a polynomial using long division

PART 1: DIVIDING A POLY BY A MONO

To divide a polynomial by a monomial, divide each term of the polynomial by the monomial

1 Divide.

a. $(3m^3 - 6m^2 + m) \div 3m^2$

b. $(8t^5 + 16t^3 - 4t^2 + 2t) \div 4t^2$

PART 2: LONG DIVISION

The process of dividing a polynomial by a binomial is similar to long division. For example, consider dividing 737 by 21.

You can summarize the process for long division as

"Divide, multiply, subtract, bring down, and repeat as necessary."

In the division above, the answer is written as a mixed number: $35\frac{2}{21}$ means $35 + \frac{2}{21}$. In dividing polynomials, write the answer as quotient $+ \frac{remainder}{divisor}$.

PART 2: LONG DIVISION

2 Divide.
a. $(2b^2 - b - 3) \div (b + 1)$

PART 2: LONG DIVISION

b. $(6m^2 - 5m - 7) \div (2m + 1)$

PART 2: LONG DIVISION

$(c^3 - 4c + 12) \div (c + 3)$

CAN YOU?? PROVE IT!!

❑ I can divide polynomial by a monomial

❑ I can divide a polynomial using long division

2. $(12x^8 - 8x^3) \div 4x^4$ **14.** $(2w^3 + 3w - 15) \div (w - 1)$