Lesson 1.4 Division of Polynomials

Algebra 2

Dividing a Polynomial by a Monomial

- Rewrite as fraction
- > Dividing every term of the polynomial by the monomial
- Using exponent rules _______ exponents of the same variable
- Keep the signs of the polynomial

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

 $\frac{4xy^2 - 2xy + 2x^2y}{xy} \xrightarrow{\times} 2x + 4y - 2$
 $\frac{4xy^2}{xy} - \frac{2xy}{xy} + \frac{2x^2y}{xy}$
 $4x^9y - 2x^9y^9 + 2xy^9$
 $4y - 2 + 2x$
2. $(20c^4d^2f - 16cdf^2 - 4cdf) \div (4cdf)$
 $\frac{20c^4d^2f - 16cdf^2 - 4cdf) \div (4cdf)}{4cdf}$
 $\frac{20c^4d^2f - 16cdf^2 - 4cdf) \div (4cdf)}{4cdf}$

3.
$$(6x^{4}y^{3} + 12x^{3}y^{2} - 18x^{2}y) \div (3xy)$$

$$\frac{6x^{4}y^{3} + 12x^{3}y^{2} - 18x^{2}y}{3xy} - \frac{18x^{2}y}{3xy}$$

$$\frac{6x^{4}y^{3}}{3xy} + \frac{12x^{3}y^{2}}{3xy} - \frac{18x^{2}y}{3xy}$$

$$\frac{2x^{3}y^{2} + 4x^{2}y - 6x}{3xy}$$

Dividing a Polynomial by a Binomial – Long Hand Division

- > Take the first term in polynomial and divide it by the first term in the binomial
- > Multiply this term by BOTH terms in the binomial
- Subtract (aka change signs)
- > Repeat until last term in the polynomial

1.
$$(x^2 + 3x - 40) \div (x - 5)$$

X+8

Quotient-Remainder Form: When there is a remainder from polynomial long division, must be written in the form





0

łD

3.
$$(3z^{4}-6z^{3}-9z^{2}+3z-6)+(z+3)$$

 $= 2+3\begin{bmatrix} 3z^{3}-15z^{2}+3bz-105\\ 3z^{4}+9z^{3}\\ -15z^{3}-9z^{2}\\ -15$