Dividing Polynomials

I. Dividing a Polynomial by a Monomial: Divide every term in the polynomial (dividend) by the monomial (divisor).

Examples: Divide.

1) \((15x^3 - 20x^2 + 10) \div (5)\)

2) \(\frac{30x^4 - 15x^3 + 3x^2 - 10x}{-5x^2}\)

3) \(\frac{40x^4 - 16x^2 + 32x - 4}{8x}\)

II. Dividing a Polynomial by a Binomial: Use Long Division

Examples: Divide.

1) \(\underline{32}\frac{9075}{x}\)

   divisor is 32; dividend is 9075

   quotient is

   remainder is

   To check: (divisor \times quotient) + remainder = dividend

2) \((2x^2 + 3x - 14)\div (x - 2)\)
To divide with poly’s:
- Write the polynomials in descending order.
- Include missing terms with a coefficient of 0.

3) \( \frac{2x^3 - 5x^2 + 7x + 8}{2x + 1} \)

4) \( \frac{15x + 2x^3 - 4}{x + 3} \)

5) \( \frac{4y^2 + 8y + 3}{2y - 1} \)

6) \( \frac{10x + 3x^2 + 6}{x + 2} \)