

11.7 Dividing Polynomials

Assignment:

To divide a polynomial by a monomial: Rewrite the monomial as denominator then simplify each term

Polynomial long division:

Examples

1. Divide $9x^2 + 12x - 18$ by $3x$.

$$3 \frac{9x^2}{3x} + \frac{12x}{3x} - \frac{18}{3x}$$

$$3x + 4 - \frac{6}{x}$$

2. Divide $4p^2 - 10p$ by $-2p$

$$\frac{-24p^2}{-2p} + \frac{16p}{-2p}$$

$$-2p + 5$$

3. Use long division to divide 453 by 18.

$$\cancel{25 \frac{3}{18}} \\ 25 \frac{1}{6}$$

$$\begin{array}{r} 25 \\ 18 \overline{) 453} \\ \underline{-36} \\ 93 \\ \underline{-90} \\ 3 \end{array}$$

$$3x(x+3)$$

4. Divide $3x^2 + 7x - 12$ by $x + 3$.

$$\begin{array}{r}
 3x - 2 + \frac{-6}{x+3} \\
 \hline
 (x+3) \overline{) 3x^2 + 7x - 12} \\
 \underline{-3x^2 + 9x} \\
 2x - 12 \\
 \underline{+2x + 6} \\
 -6
 \end{array}$$

5. Divide $x^3 - 3x + 5$ by $x + 2$.

$$\begin{array}{r}
 x^2 - 2x + 1 + \frac{3}{x+2} \\
 \hline
 (x+2) \overline{) x^3 + 0x^2 - 3x + 5} \\
 \underline{-x^3 + 2x^2} \\
 2x^2 - 3x + 5 \\
 \underline{-2x^2 + 4x} \\
 -x + 5 \\
 \underline{+x + 2} \\
 3
 \end{array}$$