

5.5: Dividing Polynomials

Algebra III

10/18

Let's Review Long Division

$$\begin{array}{r} \textcircled{1}157 \cdot 3471 \div 3 \\ 3 \overline{) 3471} \\ \underline{-3} \\ 04 \\ \underline{3} \\ 17 \\ \underline{15} \\ 21 \\ \underline{21} \\ 0 \end{array}$$

$$\begin{array}{r} 1156 + \frac{2}{3} \\ 3 \overline{) 3470} \\ \underline{-3} \\ 04 \\ \underline{3} \\ 17 \\ \underline{15} \\ 20 \\ \underline{18} \\ -2 \end{array}$$

Divide:

1. $\frac{10x^2 - 25x + 35}{5}$

$$\frac{10x^2}{5} - \frac{25x}{5} + \frac{35}{5}$$

$$\begin{array}{r}
 2x^2 - 5x + 7 \\
 \hline
 5 \overline{) 10x^2 - 25x + 35} \\
 \underline{10x^2} \\
 0 - 25x \\
 \underline{-25x} \\
 0 + 35 \\
 \underline{35} \\
 0
 \end{array}$$

$$2x^2 - 5x + 7$$

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

$$\begin{array}{r}
 -x^2 - 3x + 2 + \frac{-1}{-3} \\
 \hline
 -3 \overline{) 3x^2 + 9x - 7} \\
 \underline{3x^2} \\
 0 + 9x \\
 \underline{-9x} \\
 0 - 7 \\
 \underline{-6} \\
 -1
 \end{array}$$

Divide:

$$1. \frac{4x^4 - 8x^3 + 16x^2}{4x^3}$$

$$\begin{array}{r} x - 2 + \frac{4}{x} \\ 4x^3 \overline{) 4x^4 - 8x^3 + 16x^2} \\ \underline{4x^4} \\ 0 - 8x^3 \\ \underline{-8x^3} \\ 0 + 16x^2 \\ \underline{16x^2} \\ 0 \end{array}$$

$$2. (3x^4 + 12x^3 - 5x) \div -3x^2$$

$$\begin{array}{r} -x^2 - 4x + \frac{5}{3x} \\ -3x^2 \overline{) 3x^4 + 12x^3 - 5x} \\ \underline{(-) 3x^4} \\ 0 + 12x^3 - 5x \\ \underline{12x^3} \\ 0 - 5x \\ \underline{-5x} \\ 0 \end{array}$$

Divide:

$$1. \frac{2k^2 + 17k + 30}{k + 6}$$

$$\begin{array}{r} 2k + 5 \\ k + 6 \overline{) 2k^2 + 17k + 30} \\ \underline{2k^2 + 12k} \\ 5k + 30 \\ \underline{5k + 30} \\ 0 \end{array}$$

$$(2k + 5)(k + 6)$$

Divide:

$$1. \frac{k^2 + 5k + 30}{k + 6}$$

$$k(k+6)$$

$$-1(k+6)$$

$$\begin{array}{r} k-1 + \frac{36}{k+6} \\ \underline{k+6} \overline{) k^2 + 5k + 30} \\ (-) \underline{k^2 + 6k} \\ -1k + 30 \\ (-) \underline{-k - 6} \\ 36 \end{array}$$

Divide:

$$(4x^3 + 3x - 8) \div (x + 2)$$

$$4x^2(x+2)$$

$$-8x(x+2)$$

$$\begin{array}{r} 4x^2 - 8x + 19 + \frac{-46}{x+2} \\ \underline{x+2} \overline{) 4x^3 + 0x^2 + 3x - 8} \\ \underline{4x^3 + 8x^2} \\ -8x^2 + 3x \\ \underline{-8x^2 - 16x} \\ 19x - 8 \\ \underline{19x + 38} \\ -46 \end{array}$$

Divide:

$$\frac{k^3 - 31k + 30}{k + 6}$$

HOMEWORK

pg 277 #5, 9, 10, 17, 19, 23, 27, 31

