Algebra 1

Chapter 11

Section 11-3

Review: Long Division

$$\begin{array}{r} 218\text{R}2 \\ 9\overline{)1964} \\ -18 \\ \hline 16 \\ -9 \\ \hline 74 \\ -72 \\ \hline \text{R}2 \end{array}$$

$$\begin{array}{r} 218\tfrac{2}{9} \\ 9\overline{)1964} \\ 18 \\ \hline 16 \\ 9 \\ \hline 74 \\ 72 \\ \hline 2 \end{array}$$

Dividing a Polynomial by a Polynomial

Step 1 Arrange the terms in standard form. If a term is missing from the dividend, write the term with a coefficient of 0.

Step 2 Divide the first term of the dividend by the first term of the divisor. This is the first term of the quotient.

Step 3 Multiply the first term of the quotient by the whole divisor and place the product under the dividend.

Step 4 Subtract this product from the dividend.

Step 5 Bring down the next term.

Repeat Steps 2–5 as necessary until the degree of the remainder is less than the degree of the divisor.

$$\text{Divisor}\,\overline{\big)\,\text{Dividend}}^{\ \text{Quotient}}$$

Dividend ÷ Divisor = Quotient

Divide.

$(12j^5 + 6j^3 - 2j + 9) \div (\boxed{2j^2})$

$$\frac{12j^5}{2j^2} + \frac{6j^3}{2j^2} - \frac{2j}{2j^2} + \frac{9}{2j^2}$$

$$\boxed{6j^3 + 3j - \frac{1}{j} + \frac{9}{2j^2}}$$

Divide.

$(2x^3 - 7x^2 + 12) \div (2x - 3)$

$$x^2 - 2x - 3 + \frac{3}{2x-3}$$

$$2x-3 \,\big)\, 2x^3 - 7x^2 + 0x + 12$$

$$-\cancel{2x^3} + 3x^2$$

$$-\cancel{4x^2} + 0x$$

$$+4x^2 \mp 6x$$

$$-\cancel{6x} + 12$$

$$+6x - 9$$

$$3$$

Divide.

$$(4j^4 - 16j^3 - 5j^2 + 31j - 44) \div (j - 4)$$

$4j^3 - 5j + 11$

$j - 4 \,\overline{)\, 4j^4 - 16j^3 - 5j^2 + 31j - 44}$

$-4j^4 + 16j^3$

$0 - 5j^2 + 31j$

$+5j^2 - 20j$

$11j - 44$

$-11j + 44$

0