

Classwork Hon Alg 2 Polynomial Long Division Name:

You can divided polynomials using long division like you did when you first learned long division with whole numbers.

Example: Find this quotient

$$\frac{2x^3 - 5x^2 + 3x - 7}{x + 4}$$

(A)

$$\begin{array}{r} 2x^2 \\ x+4 \overline{) 2x^3 - 5x^2 + 3x - 7} \\ \underline{2x^3 + 8x^2} \\ -13x^2 + 3x \end{array}$$

x goes into $2x^3$ $2x^2$ times (1)

multiply (2) $2x^2$ by the divisor $x+4$

(3) subtract and bring down next term

(B)

$$\begin{array}{r} 2x^2 - 13x \\ x+4 \overline{) 2x^3 - 5x^2 + 3x - 7} \\ \underline{2x^3 + 8x^2} \\ -13x^2 + 3x \\ \underline{-13x^2 - 52x} \\ 55x - 7 \end{array}$$

x goes into $-13x^2$ $-13x$ times (4)

mult $-13x$ by the divisor $x+4$ (5)

(6) subtract and bring down next term

(C)

$$\begin{array}{r} 2x^2 - 13x + 55 \\ x+4 \overline{) 2x^3 - 5x^2 + 3x - 7} \\ \underline{2x^3 + 8x^2} \\ -13x^2 + 3x \\ \underline{-13x^2 - 52x} \\ 55x - 7 \\ \underline{55x + 220} \\ -227 \end{array}$$

x goes into $55x$, 55 times (7)

mult 55 by the divisor $x+4$ (8)

(9) SUBTRACT, WHAT EVER IS LEFT IS THE REMAINDER

ANSWER

$$\frac{2x^3 - 5x^2 + 3x - 7}{x + 4} = 2x^2 - 13x + 55$$

$R = -227$

Find each quotient. State any remainder as R =.

1. $\frac{2x^2 - 11x + 5}{x + 3}$

2. $\frac{5x^3 - 19x^2 - 12x + 32}{x - 4}$

3. $\frac{3x^3 + 7x^2 - 9x + 10}{x + 2}$