

Do the following using long division without a calculator. Give any remainder as a fraction

$$\frac{1784}{12} =$$

$$\begin{array}{r} 148 \text{ } r=8 \\ 12 \overline{) 1784} \\ \underline{12} \\ 58 \\ \underline{48} \\ 104 \\ \underline{96} \\ 8 \end{array} \quad \text{or} \quad 148 + \frac{8}{12}$$

$$\begin{array}{r} 15 \text{ } \text{quotient} \\ 8 \overline{) 120} \\ \text{divisor} \quad \text{dividend} \end{array}$$

Sec 6-3: Dividing Polynomials

Polynomial Long Division:

$$x + 4 \overline{) x^2 + 9x + 20}$$

$$\begin{array}{r} x + 5 \text{ } r=0 \\ (x) + 4 \overline{) (x^2 + 9x + 20)} \\ \underline{-(x^2 + 4x)} \\ 5x + 20 \\ \underline{-(5x + 20)} \\ 0 \end{array}$$

Find this quotient. Give any remainder as a fraction.

$$\frac{4x^2 + 18x - 31}{2x + 5} =$$

$$\begin{array}{r} 2x + 4 \quad r = -5 \text{ or } -\frac{5}{2x+5} \\ 2x+5 \overline{) 4x^2 + 18x - 31} \\ \underline{4x^2 + 10x} \\ 8x - 31 \\ \underline{8x + 20} \\ -51 \end{array}$$

Find this quotient: $\frac{4x^3 + 7x - 9}{x + 3}$

$$\begin{array}{r} 4x^2 - 12x + 43 \quad r = -138 \text{ or } -\frac{138}{x+3} \\ x+3 \overline{) 4x^3 + 0x^2 + 7x - 9} \\ \underline{4x^3 + 12x^2} \\ -12x^2 + 7x \\ \underline{-12x^2 - 36x} \\ 43x - 9 \\ \underline{43x + 129} \\ -138 \end{array}$$

Find this quotient: $\frac{3x^4 + x^3 + x^2 + 2x - 10}{x^2 + 2} =$

$$\begin{array}{r} 3x^2 + x - 5 \quad r = 0 \\ x^2+2 \overline{) 3x^4 + x^3 + x^2 + 2x - 10} \\ \underline{3x^4 + 0x^3 + 6x^2} \\ x^3 - 5x^2 + 2x \\ \underline{x^3} \\ -5x^2 + 2x \\ \underline{-5x^2 - 10} \\ 2x \\ \underline{2x} \\ 0 \end{array}$$

$$\begin{array}{r} x^2 + 11x + 20 \quad r = 66 \text{ or } +\frac{66}{x-3} \\ x-3 \overline{) x^3 + 8x^2 - 13x + 6} \\ \underline{x^3 - 3x^2} \\ 11x^2 - 13x \\ \underline{11x^2 - 33x} \\ 20x + 6 \\ \underline{20x - 60} \\ 66 \end{array}$$