



3.2 # ~~10~~

$$\frac{-11x^4 + 2x^3 - 8x^2 - 4}{x+3}$$

$$\begin{array}{r} -11x^3 \\ x+3 \overline{) -11x^4 + 2x^3 - 8x^2 - 4} \\ \underline{-11x^3(x+3)} \quad -11x^4 \quad -33x^3 \end{array} \quad x \cdot ? = -11x^4$$

$$\frac{2x^3 + 5x^2 + 12}{x+3}$$

$$\begin{array}{r} 2x^2 \quad -x + 3 \\ x+3 \overline{) 2x^3 + 5x^2 + 12} \\ \underline{2x^2(x+3)} \quad -2x^3 + 6x^2 \\ \phantom{2x^2(x+3)} \quad -x^2 + 12 \\ \phantom{2x^2(x+3)} \quad -x(x+3) \quad \phantom{+ 12} \\ \phantom{2x^2(x+3)} \quad \phantom{-x(x+3)} \quad 3x + 12 \\ \phantom{2x^2(x+3)} \quad 3(x+3) \rightarrow \quad \underline{-3x + 9} \\ \phantom{2x^2(x+3)} \phantom{3(x+3)} \phantom{\rightarrow} \quad \phantom{-3x + 9} \quad 3 \end{array} \quad \begin{array}{l} x \cdot ? = 2x^3 \\ x \cdot ? = -x^2 \\ x \cdot ? = 3x \end{array}$$

$$(2x^3 + 5x^2 + 12) \div x+3 = 2x^2 - x + 3 \text{ R } 3$$

Synthetic

$$\begin{array}{r} -3 \overline{) 2 \quad 5 \quad 0 \quad 12} \\ + \quad 0 \quad -6 \quad 3 \quad -9 \\ \hline 2 \quad -1 \quad 3 \quad \boxed{3} \\ \hline 2x^2 \quad -x + 3 \end{array}$$

$$\frac{2x^3 + 5x^2 + 12}{x+3} = 2x^2 - x + 3 + \frac{3}{x+3}$$

$$2x^3 + 5x^2 + 12 =$$

$$(x+3)(2x^2 - x + 3) + 3$$

#22  $f(2) = -8 + 4 + 3 \cdot 2 - 2 = 0$

$$f(x) = -x^3 + x^2 + 3x - 2 ; k = 2$$

↓

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

$$\begin{array}{r}
 2 \overline{) \begin{array}{cccc} -1 & 1 & 3 & -2 \end{array}} \\
 \underline{\begin{array}{cccc} -2 & -2 & 2 & \phantom{0} \end{array}} \\
 \begin{array}{cccc} -1 & -1 & 1 & \boxed{0} \end{array} R
 \end{array}$$

$$f(x) = (x-2)(-x^2 - x + 1) + 0$$

$$f(2) = 0$$

↑  
plug in 2

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3.2 # 1, 13, 21, 23, 29, 31