

$$\frac{8x^{-2} - 2x^{-1}}{10x^{-1} - 6x^{-2}}$$

$$\rightarrow \frac{\frac{x^2}{1} \frac{8}{x^2}}{\frac{x^2}{1} \frac{10}{x}} - \frac{\frac{2x^2}{x} \frac{1}{1}}{\frac{6x^2}{x^2} \frac{1}{1}}$$

$$\frac{8-2x}{10x-6} \rightarrow \frac{2(4-x)}{2(5x-3)}$$

11.4 divide polynomials

$$\frac{7}{2} = 3\frac{1}{2}$$

$$\begin{array}{r} 3 \\ 2 \overline{) 7} \\ \underline{-6} \\ 1 \end{array}$$

$$\frac{9x^3 + 6x^2 - 12x + 15}{3x} \quad \underline{\text{divide}}$$

$$\frac{9x^3}{3x} + \frac{6x^2}{3x} - \frac{12x}{3x} + \frac{15}{3x}$$

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

$$\left( \frac{18x^7}{-2x^4} - \frac{9x^6}{-2x^4} + \frac{20x^5}{-2x^4} - \frac{10x^4}{-2x^4} \right) \div (-2x^4)$$

divide

monomial

$$-9x^3 + \frac{9}{2}x^2 - 10x + 5$$

$$\frac{x^2 - 3x - 5}{x-2}$$

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

not useful!

$$\begin{array}{r} x-1 - \frac{7}{x-2} \\ \hline x-2 \overline{) x^2 - 3x - 5} \\ \underline{-x^2 + 2x} \phantom{-5} \\ -x - 5 \end{array}$$

$$\begin{array}{r} -x - 5 \\ +x + 2 \\ \hline -7 \end{array}$$

no no no

$$\begin{array}{r} \rightarrow 2 \frac{6}{7} \\ \hline 7 \overline{) 153} \\ \underline{-14} \phantom{3} \\ 13 \phantom{3} \\ \underline{-14} \\ -1 \end{array}$$

no

check  $(x-1)(x-1) = x^2 - 3x + 2 - 7$

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

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

$$\begin{array}{r} \underline{x+3} \overline{) x^3 + 2x^2 - 5x + 1} \\ \underline{-x^3 + 3x^2} \phantom{- 5x + 1} \\ \phantom{-x^3 +} -x^2 - 5x \phantom{+ 1} \\ \phantom{-x^3 +} \underline{+x^2 + 3x} \phantom{+ 1} \\ \phantom{-x^3 +} \phantom{-x^2 -} -2x + 1 \\ \phantom{-x^3 +} \phantom{-x^2 -} \underline{+2x + 6} \\ \phantom{-x^3 +} \phantom{-x^2 -} \phantom{-2x +} +7 \end{array}$$

$$(2x^3 + 13x^2 + 9x - 6) \div (2x+3) \quad \text{divide}$$

$$\begin{array}{r}
 x^2 + 5x - 3 + \frac{3}{2x+3} \\
 2x+3 \overline{) 2x^3 + 13x^2 + 9x - 6} \\
 \underline{-2x^3 + 3x^2} \phantom{+ 9x - 6} \\
 10x^2 + 9x \phantom{- 6} \\
 \underline{-10x^2 + 15x} \phantom{- 6} \\
 -6x - 6 \\
 \underline{+6x + 9} \\
 3
 \end{array}$$

$$(4x^3 - 6x - 11) \div (2x - 4)$$

$$\begin{array}{r}
 2x^2 + 4x + 5 + \frac{9}{2x-4} \\
 2x-4 \overline{) 4x^3 + 0x^2 - 6x - 11} \\
 \underline{- 4x^3 + 8x^2} \phantom{- 11} \\
 8x^2 - 6x \phantom{- 11} \\
 \underline{- 8x^2 + 16x} \phantom{- 11} \\
 10x - 11 \\
 \underline{- 10x + 20} \\
 9
 \end{array}$$



$$(x^3 - 64) \div (x - 4)$$

divide

$$\begin{array}{r}
 \phantom{x-4} \overset{2}{x} + 4x + 16 \\
 x-4 \overline{) x^3 + 0x^2 + 0x - 64} \\
 \underline{-x^3 + 4x^2} \phantom{+ 0x - 64} \\
 4x^2 + 0x \phantom{- 64} \\
 \underline{-4x^2 + 16x} \phantom{- 64} \\
 16x - 64 \\
 \underline{-16x + 64} \\
 0
 \end{array}$$

$$\begin{array}{r} 4x^4 + 3x^3 + 4x^2 + 9x - 6 \\ \hline x^2 + 3 \end{array} \quad \text{divide}$$

$$\begin{array}{r} \phantom{2} \phantom{X + 0X + 3} \phantom{4x^2 + 3x - 8 + \frac{18}{x^2 + 3}} \\ X + 0X + 3 \overline{) 4x^4 + 3x^3 + 4x^2 + 9x - 6} \\ \underline{- 4x^4 + 0x^3 + 12x^2} \phantom{- 6} \\ 3x^3 - 8x^2 + 9x \phantom{- 6} \\ \underline{- 3x^3 + 0x^2 + 9x} \phantom{- 6} \\ - 8x^2 + 0x - 6 \\ \underline{+ 8x^2 + 0x + 24} \\ 18 \end{array}$$