

4.8. DIVISION OF POLYNOMIALS

EX. 1

$$a.) (12x^5) \div (3x^2) = \frac{12x^5}{3x^2} = 4x^3$$

$$b.) \frac{-4x^3}{2x^3} = -2$$

$$c.) \frac{-10a^2b^4}{-2a^2b^2} = 5b^2$$

Ex.2

$$a.) (5x - 10) \div 5 = \frac{5x - 10}{5} = \frac{5x}{5} - \frac{10}{5} = x - 2$$

$$b.) \frac{-8x^6 + 12x^4 - 4x^2}{4x^2} = -2x^4 + 3x^2 - 1$$

Ex. 3

$$\underline{(x^3 - 5x - 1)} \div \underline{(x - 4)}$$

$$\begin{array}{r} x^2 + 4x + 11 \quad R 43 \\ x-4 \overline{) 1x^3 + 0x^2 - 5x - 1} \\ \underline{-x^3 + 4x^2} \\ 4x^2 - 5x \\ \underline{-4x^2 + 16x} \\ 11x - 1 \\ \underline{-11x + 44} \\ 43 \end{array}$$

$$\begin{array}{r} (x^2 + 4x + 11) \overline{) (x^3 - 5x - 1)} + 43 \\ \underline{-x^3} \\ 7x^3 - 5x - 1 \end{array}$$

Ex. 4

$$\underline{(2x^3 - 4 - 7x^2)} \div (2x - 3)$$

$$\begin{array}{r} x^2 - 2x - 3 \quad R 5 \\ \hline 2x - 3 \overline{) 2x^3 - 7x^2 + 0x - 4} \\ \underline{-2x^3 + 3x^2} \quad \downarrow \\ -4x^2 + 0x \quad \downarrow \\ \underline{+4x^2 - 6x} \quad \downarrow \\ -6x - 4 \\ \underline{+6x + 9} \\ 5 \end{array}$$

Ex. 5

$$\frac{-3x}{x-2}$$
$$\begin{array}{r} \textcircled{x-2} \overline{) -3x + 0} \\ \quad +3x + -6 \\ \hline \qquad \qquad -6 \end{array}$$

$\textcircled{-3} \text{ R } \textcircled{-6}$

$$-3 + \frac{-6}{x-2}$$