

## 7.4 Dividing Polynomials

1. Heart Method - only if there is a monomial in the denominator.

Ex: 
$$\frac{4x^4 + 10x^2 + 6x}{2x}$$

$$2x^3 + 5x + 3$$

## ② Long Division

$$\begin{array}{r}
 x + 3 + \frac{7}{x-1} \\
 \hline
 x-1 \overline{) x^2 + 2x + 4} \\
 \underline{-(x^2 - 1x)} \quad \downarrow \\
 3x + 4 \\
 \underline{-(3x - 3)} \\
 7
 \end{array}$$

Ex:  $(x^3 - 2) \div (x - 1)$

$$\begin{array}{r}
 x^2 + x + 1 + \frac{-1}{x-1} \\
 \hline
 x-1 \overline{) x^3 + 0x^2 + 0x - 2} \\
 \underline{-(x^3 - 1x^2)} \quad \downarrow \\
 x^2 + 0x \\
 \underline{-(x^2 - 1x)} \quad \downarrow \\
 x - 2 \\
 \underline{-(x - 1)} \\
 -1
 \end{array}$$

~~EX.~~ :

$$(2x^4 - x^3 - 23x^2 + 9x + 45) \div (2x^2 - x - 5)$$

$$\begin{array}{r} \phantom{2x^2 - x - 5} \overline{) 2x^4 - x^3 - 23x^2 + 9x + 45} \\ \underline{-(2x^4 - x^3 - 5x^2)} \phantom{+ 9x + 45} \\ \phantom{2x^2 - x - 5} \phantom{2x^4 - x^3 - } -18x^2 + 9x + 45 \\ \underline{-( -18x^2 + 9x + 45)} \\ \phantom{2x^2 - x - 5} \phantom{2x^4 - x^3 - } \phantom{-18x^2 + } 0 \end{array}$$

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2-40 even, skip 10, 12

odds extra credit