

Polynomial Long Division

(works for all polynomial division)

$$\begin{array}{l} \text{Dividend} \rightarrow (x^2 + 5x - 6) \div (x - 2) \leftarrow \text{Divisor} \end{array}$$

1: write dividend inside vinculum and divisor outside, filling in missing terms

$$\begin{array}{r} x + 7 + \frac{8}{x-2} \\ x-2 \overline{) x^2 + 5x - 6} \\ \underline{-(x^2 - 2x)} \\ 7x - 6 \\ \underline{-(7x - 14)} \\ 8 \end{array}$$

2: What would need to be multiplied by first term to get first term? Write on top!

3: Distribute this term by divisor, write underneath

$$\begin{array}{r} x^2 + x - 4 + \frac{8}{x+1} \\ x+1 \overline{) x^3 + 2x^2 - 3x + 4} \\ \underline{-(x^3 + x^2)} \\ x^2 - 3x + 4 \\ \underline{-(x^2 + x)} \\ -4x + 4 \\ \underline{-(-4x - 4)} \\ 8 \end{array}$$

4: subtract

★ Distribute your - to subtract

5: repeat until you write a constant on top, what's left is remainder!