

# Fully Factor

finding y-value

ex 1 Use the remainder theorem (syn. division) to find  $f(-2)$   $f(x) = 3x^3 + 8x^2 + 5x - 7$

$$\begin{array}{r|rrrr} -2 & 3 & 8 & 5 & -7 \\ & \downarrow & -6 & -4 & -2 \\ \hline & 3 & 2 & 1 & \boxed{-9} \end{array} \leftarrow \text{remainder / y-value}$$

$$\boxed{f(-2) = -9}$$

fully factor

ex 2 a) Show that  $(x-2)$  &  $(x+3)$  are factors of  $2x^4 + 7x^3 - 4x^2 - 27x - 18$ .

$$\begin{array}{r|rrrrr} 2 & 2 & 7 & -4 & -27 & -18 \\ & \downarrow & 4 & 22 & 36 & 18 \\ \hline & 2 & 11 & 18 & 9 & \boxed{0} \end{array} \checkmark \text{ } x-2 \text{ is a factor}$$

use answers as coefficients

$$\begin{array}{r|rrrr} -3 & 2 & 11 & 18 & 9 \\ & \downarrow & -6 & -15 & -9 \\ \hline & 2 & 5 & 3 & \boxed{0} \end{array} \checkmark \text{ } x+3 \text{ is a factor}$$

b) fully factor

$$2x^2 + 5x + 3 = (2x+3)(x+1)$$

$$\boxed{(2x+3)(x+1)(x+3)(x-2)}$$

c) zeros

$$x = -3/2, -1, -3, 2$$