

Factorising Polynomials

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Select RUN mode from the main menu by using the arrow keys to highlight the RUN icon or pressing 1.



Setting up a 'guess and check method on the calculator involves assigning a value to x and making substitutions of these values into the equation and attempting to get the answer zero. This results in the finding of linear factors – using the factor theorem (and remainder theorem).

Example: Factorise the polynomial equation

$$x^3 + 2x^2 - x - 2 = 0$$

Answer: Type into the calculator the following:

SHIFT VARS F4 → X F6 F5

then type in the equation, namely

$$x^3 + 2x^2 - x - 2 \quad \mathbf{EXE}$$



A ? will be displayed, this is the calculator way of asking for an inputted value.

Enter in 0 and the calculator is calculating $(0)^3 + 2(0)^2 - (0) - 2 = -2$

The display on the calculator will be:



Now try some other values by pushing the EXE button and entering in a value for x.

The following screen results show that:



$(x - 1)$ is a factor,
as $f(1) = 0$



$(x + 2)$ is a factor
as $f(-2) = 0$



and $(x + 1)$ is a factor.
as $f(-1) = 0$

$$\text{Hence, } x^3 + 2x^2 - x - 2 = (x - 1)(x + 2)(x + 1)$$