Chapter 3 / **Example 27**

Using the roots of a polynomial to factorise

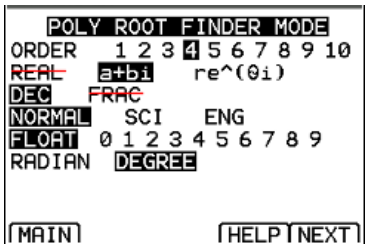
Express the polynomial $f(x) = x^4 - 6x^3 - 19x^2 + 24x$ as a product of linear factors, and check your answer by using your calculator.

Press [APPS] :PlySmlt2

Press [enter] to enter the main menu and select 1:POLYNOMIAL ROOT FINDER.

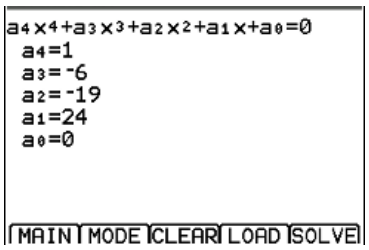
Select order 4. In this App, real roots is not an option when the order is ≥ 4 so select type a+bi.

Leave the other options as they are.



Press [f5] NEXT.

Enter the coefficients: 1, -6, -19, 24 and 0.



Press [f5] SOLVE.

The calculator shows the roots: 8, -3, 1 and 0.

The factorization is: $f(x) = x(x-1)(x+3)(x-8)$.