

Further Pure Mathematics 1

Complex Numbers Section 4

Study Plan

Background

At the start of this chapter, complex numbers were introduced as a means of giving solutions to equations such as $x^2 + 10 = 0$, which have no solutions in the real numbers. You can now find the solutions of any quadratic equation, and you have seen that the complex roots of a quadratic equation are complex conjugates.

In this section you will look at the solutions of cubic and higher order equations. It turns out that any polynomial equation of order n has exactly n roots, including complex roots and repeated roots.

Detailed work plan

This section covers the material in Exercise 2G of the FP1 textbook. It covers the work under the main heading “Complex numbers and equations”.



Read the section “Complex numbers and equations”, paying careful attention to Examples 2.9 and 2.10. There is some background information in the “Notes and Examples”, and some web links if you would like to find out about the formulae for solving cubic and quartic equations.

In this section you need to be able to use the factor theorem and to factorise polynomials when you know a linear or quadratic factor. If you have covered the work on the factor theorem in C1, this should be no problem. If you haven't, click [HERE](#) for information on the factor theorem, or look at chapter 3 of the AS Pure Mathematics textbook.



In Exercise 2G attempt at least three of Questions 1-6. Questions 7-11 are examination style questions. Attempt at least three of these.

Use the Hints on the website if you need to.

Check your answers from the back of the textbook, and refer to the worked Solutions on the website if you get any questions wrong.