OCR Further Pure 1

Complex Numbers

Section 3: Modulus and argument

Study Plan

Background

In this section you will look at writing a complex number in a different form. Until now you have dealt with complex numbers in the form $z = x + y\mathrm{i}$, so the number is written in terms of the real and imaginary parts. The alternative form is in terms of the *modulus* (the distance of the point z from the origin in the Argand diagram) and the *argument* (the angle between a line from the origin to the point z, and the real axis).

You will also see how sets of points in the Argand diagram can be described in terms of the modulus or argument of a complex number.

Detailed work plan

1. Read sections 9.1 and 9.2 (pages 142 – 147). There is a further worked example on the modulus in the **Notes and Examples**. Look carefully at the worked examples in the textbook – Examples 9.1.1 and 9.1.2 show the two types of sets of points (loci) which you need to be able to identify. There is a summary of this work in the **Notes and Examples**.

2. **Exercise 9A**
   Attempt questions1, 2, 3 and 4.

3. Read section 9.3 (pages 148 – 151). If you have not yet done the trigonometry work in Core 2, you can find some extra help **HERE** on angles measured in radians, and angles greater than 90°. There are some further notes and an extra example on finding the argument in the "**Notes and Examples**". Example 9.3.2 in the textbook shows the type of loci that you need to be able to recognise. There are further examples on this in the **Notes and Examples**.

4. **Exercise 9B**
   Attempt questions 1, 2, 3, the odd parts of question 4 and 5, and questions 7, 9 and 11.