**1A Exponential Form**

1. Express the numbers following numbers in the modulus argument form:





1. Express the complex number in the form , where



1. Express the following in the form where
2. Express the following in the form where and
3. Express the following in the form *,* where
4. Use: To show that:

**1B Multiplying & Dividing Complex Numbers**

1. Express the following calculation in the form x + iy:

1. Express in the form

1. , and

**1C De Moivre’s Theorem**

1. Proof by Induction:

Negatives:

0:

1. Simplify:
2. Express in the form , where

**1D Using de Moivre to Prove Trigonometric Identities**

1. Express cos3θ using powers of cosθ.
2. Use De Moivre’s theorem to show that:

Further notes:

1. Express cos5θ in the form **a**cos5θ + **b**cos3θ + **c**cosθ

Where **a**, **b** and **c** are constants to be found.

1. Express sin4θ in the form:
2. Hence, find the exact value of the following integral:

**1E Part 1 Finite Summations**

1. Given that , where is a positive integer, show that:

Notes for

1. , for , where is an integer
2. Show that

Let:

1. Use your answer to part a to show that , and find similar expressions for and

**1E Part 2 Infinite Summations**

1.
2. Show that

Let:

1. Show that
2. Hence, find trigonometric expressions for and

**1F nth Roots of Complex Numbers**

1. Solve the equation z3 = 1 and represent your solutions on an Argand diagram.



1. Show that the three cube roots of 1 can be written as where

Summary notes:

1. Solve the equation

Give your answers in both the modulus-argument and exponential forms.

1. Solve the equation:

**1G Geometric Problems with Complex Numbers**

1. Find the 6th roots of the complex number



1. Find the 6th roots of unity



Summary notes:

1. The coordinate lies at one vertex of an equilateral triangle. The centre of the triangle is at the origin.

Find the coordinates of the other vertices of the triangle

