

Section 4.4 DeMoivre's Theorem

Objective: In this lesson you learned how to find powers and n th roots of complex numbers.

Course Number

Instructor

Date

Important Vocabulary

Define each term or concept.

n th roots of unity

I. Powers of Complex Numbers (Page 331)

State DeMoivre's Theorem.

What you should learn
How to use De Moivre's Theorem to find powers of complex numbers

II. Roots of Complex Numbers (Pages 332–334)

The complex number $u = a + bi$ is an **n th root** of the complex number z if _____.

What you should learn
How to find n th roots of complex numbers

For a positive integer n , the complex number $z = r(\cos \mathbf{q} + i \sin \mathbf{q})$ has _____ given

by $\sqrt[n]{r} \left(\cos \frac{\mathbf{q} + 2\mathbf{p}k}{n} + i \sin \frac{\mathbf{q} + 2\mathbf{p}k}{n} \right)$, where $k = 0, 1, 2, \dots, n - 1$.

When k exceeds $n - 1, \dots$

Give a geometrical interpretation of the formula for the n th roots of a complex number.

Additional notes**Homework Assignment**

Page(s)

Exercises