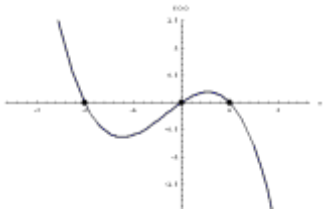
Week 14
Term 02
2015

Learning Brief

SME3
Vectors and Complex Numbers

Goals



Unit Goals

- recognise and perform operations with complex numbers in various forms
- find powers and roots of complex numbers, and explore geometric patterns which may result
- solve polynomial equations over the complex numbers
- represent complex numbers, curves and regions in the complex plane

This Week

Multiplication & Division in polar form, De Moivre's Theorem, Factorising Polynomials with complex roots.

Theoretical Components

Resources:
Maths Quest Specialist Mathematics Chapter 3E, 3F &3G
De Moivre's Theorem:
https://www.youtube.com/watch?v=MO6qU3SCLbM
Roots of Complex Numbers:
https://www.youtube.com/watch?v=HhlD7sX5Tp8
https://www.youtube.com/watch?v=L0ZHlmOawQQ
https://www.youtube.com/watch?v=9Z1uNz__2xA
https://www.youtube.com/watch?v=z2BeA7tJLgc

Knowledge Checklist:

- Multiply and divide complex numbers in polar form
- Apply De Moivre's Theorem to simplify powers of complex numbers
- Provide examples of the axioms for complex numbers
- Factorise and solve polynomials over the complex number field using both CAS and by hand methods.
- Recognise the number of solutions required for polynomials
- Conjugate pair theorem

Remember to work through the notes in the order it is presented – including where you watch movies, attempt questions play with online tools. This is developed especially to increase your conceptual understanding of the topics.

Practical Components

Do the following questions from Ex 3E & 3F:

Ex 3E: 1,3,5,6,7,8,9,10,12,13,

Ex 3F: 2,3(a,c,e,g),4,5-9,10,11.

Ex 3G: 4,5,6,12,13

Investigation

Maths Quest Specialist Mathematics Chapter 3E & 3F:
3E: 14 & 15
3F:17

QFO

Quiz/Forum/Other

Re-do last week's quiz:
http://www.quiz-creator.com/qms/quiz.php?u616212q47456v505702855