

**Syllabus Content:** Using Complex Numbers N2

**Content:** Solving equations with complex numbers N2.1

**Student Outcomes:** MEX – 12.1, 4, 7 and 8

A student:

- › understands and uses different representations of numbers and functions to model, prove results and find solutions to problems in a variety of contexts MEX12-1
- › uses the relationship between algebraic and geometric representations of complex numbers and complex number techniques to model and solve problems MEX12-4
- › applies various mathematical techniques and concepts to prove results, model and solve structured, unstructured and multi-step problems MEX12-7
- › communicates and justifies abstract ideas and relationships using appropriate language, notation and logical argument MEX12-8

|      | Student is able to:   | Implications, considerations and implementations   | Resources |
|------|---|--|-----------|
| (i)  | determine the solutions of real quadratic equations   | 1A The arithmetic of complex numbers<br><b>1B Quadratic equations</b><br>1C The Argand diagram<br>1D Modulus-argument form<br>1E Vectors and the complex plane<br>1F Curves and regions in the Argand diagram<br>1G Polynomials and complex numbers <ul style="list-style-type: none"> <li>- conjugate zero's of polynomials</li> <li>- Powers of complex numbers</li> <li>- Trigonometric Identities</li> <li>- Complex roots of polynomial equations</li> <li>- Exponential form</li> <li>- Applying the exponential form</li> </ul> |           |
| (ii) | solve quadratic equations of the form $ax^2 + bx + c = 0$ , where $a, b, c$ are complex numbers |  |           |