

MATH 2167 Mathematics 1

Associate Degree in Engineering

College of VE, Future Technologies

Tutorial 4

Complex Numbers - Roots and Polynomials

Question 1

Find the roots of the each of the following:

i. $z^2 - 4z + 13 = 0$

ii. $z^3 - 4z^2 + z + 26 = 0$

iii. $z^4 + 9z^2 + 14 = 0$

Question 2

- i. Form a quadratic with real coefficients having amongst its roots $-6 + i$.

- ii. If $-3 + i$ is solution of $P(z) = z^3 + 9z^2 + az + 30$ where a is real, then find the value of a and hence find all zeros of the cubic.

Question 3

Find all cubic roots of $z = -1 + i$ and plot them on an Argand diagram.