Linear Algebra 1
Assignment #2 - Polynomials

1) Find all solutions of $z^2 + 2z + (1 - i) = 0.$

2) Find all solutions of $z^6 + (2i - 1)z^3 - 1 - i$

3) Given the equation $z^2 + 4iz - 13 = 0$, solve for z without the quadratic formula.

4) Find all solutions of $z^3 - 3z^2 + 6z - 4 = 0$

5) Show that $(-1 + i\ 2)$ is a root of $z^3 - 2\ z^2 - 3\ z - 20 = 0$ and find the other roots.

6) Express $\sqrt{3 + i\ 4}$ in the form $a + ib\ , a, b\epsilon\ \mathbb{R}$, and $i^2 = -1$. Hence, show that one root of the equation: $z^2 + (2 - i)\ z - i\ 2 = 0$ is real and the other root is complex.

7) Find the value of p and the value of $q, p, q\ \epsilon\ \mathbb{R}, if\ (-1 + i)$ is a root of the equation: $z^2 + (-1 + i\ p)\ z + (q - i) = 0\ ,$ and find the other root.