 Square root of a complex number

Sample methods and examples

Question 1

Find the square roots of

Solution 1

Let

Equate the coefficients:

and

Substitute into (1)

Using the quadratic formula:

, since is real

When

When

The square roots of are and

Two methods to check a solution:

1. Square the roots to check they equal the original complex number **i.e.** Show:   
    and
2. Check by graphing the two simultaneous equations using graphing software.

For , graphand for , graph and then read the points of intersection. So, when and when

Question 2

Find the square root of leaving the answer in the form

Solution 2

Let

Equating the coefficients:

and

Substitute into (1)

Using the quadratic formula:

, given the modulus of **i.e.**

, since is real

or