

1.4) Roots of quadratic equations

Worked example

Given that $\alpha = 5 + 3i$ is one of the roots of a quadratic equation with real coefficients,

(a) state the value of the other root, β .

(b) find the quadratic equation.

Your turn

Given that $\alpha = 7 + 2i$ is one of the roots of a quadratic equation with real coefficients,

(a) state the value of the other root, β .

(b) find the quadratic equation.

(a) $\beta = 7 - 2i$

(b) $z^2 - 14z + 53 = 0$

Worked example

Given that $\alpha = 5 + qi$ is one of the roots of the equation $z^2 - 5pz + 41 = 0$, where p and q are positive real constants, find the value of p and the value of q

Your turn

Given that $\alpha = 5 + qi$ is one of the roots of the equation $z^2 - 2pz + 61 = 0$, where p and q are positive real constants, find the value of p and the value of q

$$p = 5, q = 6$$