

4 The quadratic equation

$$2x^2 + 4x + 3 = 0$$

has roots α and β

(a) Without solving the equation, show that $\alpha^2 + \beta^2 = 1$ (4)

(b) Without solving the equation, find the value of $\alpha^4 + \beta^4$ (3)

(c) Hence form a quadratic equation with integer coefficients that has roots α^4 and β^4 (3)

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Question 4 continued

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(Total for Question 4 is 10 marks)