

6

$$f(x) = 4x^2 - 3x - 5$$

The equation $f(x) = 0$ has roots α and β

Without solving the equation $f(x) = 0$

- (a) form an equation, with integer coefficients, that has roots $\frac{2\alpha}{\beta}$ and $\frac{2\beta}{\alpha}$ (6)

$$g(x) = 4x^2 + px + q \quad \text{where } p \text{ and } q \text{ are constants}$$

Given that the equation $g(x) = 0$ has roots $3\alpha + \beta$ and $\alpha + 3\beta$

- (b) find the value of p and the value of q (5)

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Question 6 continued

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(Total for Question 6 is 11 marks)

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