

8

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

$$g(x) = x^2 - px + q$$

The roots of the quadratic equation  $f(x) = 0$  are  $\alpha$  and  $\beta$

The roots of the quadratic equation  $g(x) = 0$  are  $\left(\alpha + \frac{1}{\alpha}\right)$  and  $\left(\beta + \frac{1}{\beta}\right)$

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

(a) show that  $p = \frac{7}{12}$

(3)

(b) Find the value of  $q$

(4)

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P 6 2 2 8 3 A 0 2 5 4 0

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**(Total for Question 8 is 7 marks)**

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