8

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

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

The roots of the quadratic equation $f(x) = 0$ are α and β

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)

Question 8 continued

Question 8 continued

Question 8 continued

(Total for Question 8 is 7 marks)