2.

$$f(z) = 2z^3 + pz^2 + qz - 41$$

where p and q are integers.

The complex number $5 - 4i$ is a root of the equation $f(z) = 0$

(a) Write down another complex root of this equation.

(1)

(b) Solve the equation $f(z) = 0$ completely.

(4)

(c) Determine the value of p and the value of q.

(2)

When plotted on an Argand diagram, the points representing the roots of the equation $f(z) = 0$ form the vertices of a triangle.

(d) Determine the area of this triangle.

(2)

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Question 2 continued

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Question 2 continued

(Total for Question 2 is 9 marks)