4. $f(z) = 6z^3 + Az^2 + Bz + C$

where A, B and C are integers.

Given that $z = \frac{2}{3} + \frac{\sqrt{17}}{3}i$ is a root of the equation $f(z) = 0$

(a) write down the other complex root of the equation $f(z) = 0$

(1)

Given that $z = -\frac{3}{2}$ is also a root of the equation $f(z) = 0$

(b) determine the value of A, the value of B and the value of C.

(5)

(c) Show all the roots of the equation $f(z) = 0$ on a single Argand diagram.

(2)

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Question 4 continued

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Question 4 continued

(Total for Question 4 is 8 marks)