5.

$$f(z) = 8z^3 + 12z^2 + 6z + 65$$

Given that $\frac{1}{2} - i\sqrt{3}$ is a root of the equation $f(z) = 0$

(a) write down the other complex root of the equation,

(1)

(b) use algebra to solve the equation $f(z) = 0$ completely.

(3)

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

(2)

(d) Show that the roots of $f(z)$ form the vertices of an equilateral triangle in the complex plane.

(2)