6.

$$f(x) = kx^2 + 3x - 11 \qquad g(x) = mx^3 - 2x^2 + 3x - 9$$

where k and m are real constants.

Given that

- the sum of the roots of f is equal to the product of the roots of g
- g has at least one root on the imaginary axis

(a) solve completely

(i) $f(x) = 0$

(ii) $g(x) = 0$

(7)

(b) Plot the roots of f and the roots of g on a single Argand diagram.

(2)