

6 The polynomial $x^3 - 4x^2 + 10x - 21$ is denoted by $f(x)$.

(a) Use the factor theorem to show that $(x - 3)$ is a factor of $f(x)$. [2]

(b) The polynomial $f(x)$ can be written as $(x - 3)(x^2 + bx + c)$ where b and c are constants.

Find the values of b and c . [2]

(c) Show that $x = 3$ is the only real root of the equation $f(x) = 0$. [2]