

4 In this question you must show detailed reasoning.

The cubic polynomial $f(x)$ is defined by $f(x) = 2x^3 - 3x^2 - 11x + 6$.

(a) Use the factor theorem to show that $(2x - 1)$ is a factor of $f(x)$. **[1]**

(b) Express $f(x)$ in fully factorised form. **[3]**

(c) Hence solve the equation $2 \times 8^y - 3 \times 4^y - 11 \times 2^y + 6 = 0$. **[3]**