6 The polynomial $\mathrm{p}(x)$ is such that $\mathrm{p}(x) = ax^3 + bx^2 + cx - 5$, where a, b and c are integers. It is given that $\mathrm{p}'(0) = 12$. It is also given that $\mathrm{p}(x)$ has a factor of $3x - 1$ and a remainder of 95 when divided by $x - 2$.

(a) Find the values of a, b and c. [7]

(b) Show that the equation $\mathrm{p}(x) = 0$ has only one real root. [3]