4 The polynomial p is such that $\mathrm{p}(x) = 2x^3 + 11x^2 + 22x + 40$.

(a) Show that $x = -4$ is a root of the equation $\mathrm{p}(x) = 0$. [1]

(b) Factorise $\mathrm{p}(x)$ and hence show that $\mathrm{p}(x) = 0$ has no other real roots. [4]