6 DO NOT USE A CALCULATOR IN THIS QUESTION.

The polynomial $\mathrm{p}(x) = 10x^3 + ax^2 - 10x + b$, where a and b are integers, is divisible by $2x + 1$. When $\mathrm{p}(x)$ is divided by $x + 1$, the remainder is -24.

(a) Find the value of a and of b. [4]

(b) Find an expression for $\mathrm{p}(x)$ as the product of three linear factors. [4]

(c) Write down the remainder when $\mathrm{p}(x)$ is divided by x. [1]

© UCLES 2021