6 DO NOT USE A CALCULATOR IN THIS QUESTION.

(a) Given that $x-3$ and $x+1$ are both factors of $2x^3-3x^2-8x-3$, solve the equation $2x^3-3x^2-8x-3=0$. [2]

(b) The polynomial $\mathrm{p}(x)=x^3+ax^2+bx+c$, where a, b and c are constants, has remainder -5 when divided by $x-1$. The curve $y=\mathrm{p}(x)$ has stationary points at $x=\frac{4}{3}$ and $x=2$.

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

(ii) Hence use the second derivative test to show that the stationary point at $x=2$ is a minimum. [2]

© UCLES 2024