6 A curve has equation $y = \left(\dfrac{x^2-1}{x^2+1}\right)^4$.

(a) Show that $\dfrac{\mathrm{d}y}{\mathrm{d}x}$ can be written as $\dfrac{Ax\left(x^2-1\right)^3}{\left(x^2+1\right)^5}$, where A is a positive integer to be found. [5]

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(b) (i) Show that the curve has stationary points where $x = -1$, $x = 0$ and $x = 1$. [1]

(ii) Use the first derivative test to determine which two stationary points have the same nature and state whether they are maximum or minimum points. [2]

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7 Solutions to this question by accurate drawing will not be accepted.

Find the x-coordinates of the points where the curve $y = (2x-9)\left(x^2+5\right)+42$ cuts the x-axis. [6]

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