

9 A curve C has equation

$$y = \frac{2 + 4x - x^2}{2x + 1} \quad x \neq -\frac{1}{2}$$

(a) Write the equation of C in the form $ax^2 + (by - 4)x + (y - c) = 0$, where a , b and c are integers whose values are to be found.

(3)

(b) Hence show that x is real when $y \leq 2$ and when $y \geq 3$

(4)

(c) Find the coordinates of the stationary points on C .

(6)

(d) Sketch C showing clearly

(i) the exact coordinates of the points where C crosses the x -axis,

(ii) the asymptote to C that is parallel to the y -axis,

(iii) the coordinates of the stationary points.

(5)

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(Total for Question 9 is 18 marks)

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