8 A curve C has equation $y = \dfrac{5x - 3}{2x - 1} \qquad x \neq \dfrac{1}{2}$

(a) Write down an equation of the asymptote to C that is

(i) parallel to the y-axis,

(ii) parallel to the x-axis.

(2)

(b) Find the coordinates of the points of intersection of C with the coordinate axes.

(2)

(c) Using calculus show that at every point on the curve, the gradient of C is positive.

(4)

(d) Using the axes on the opposite page, sketch C, showing clearly the asymptotes and the coordinates of the points of intersection of C with the coordinate axes.

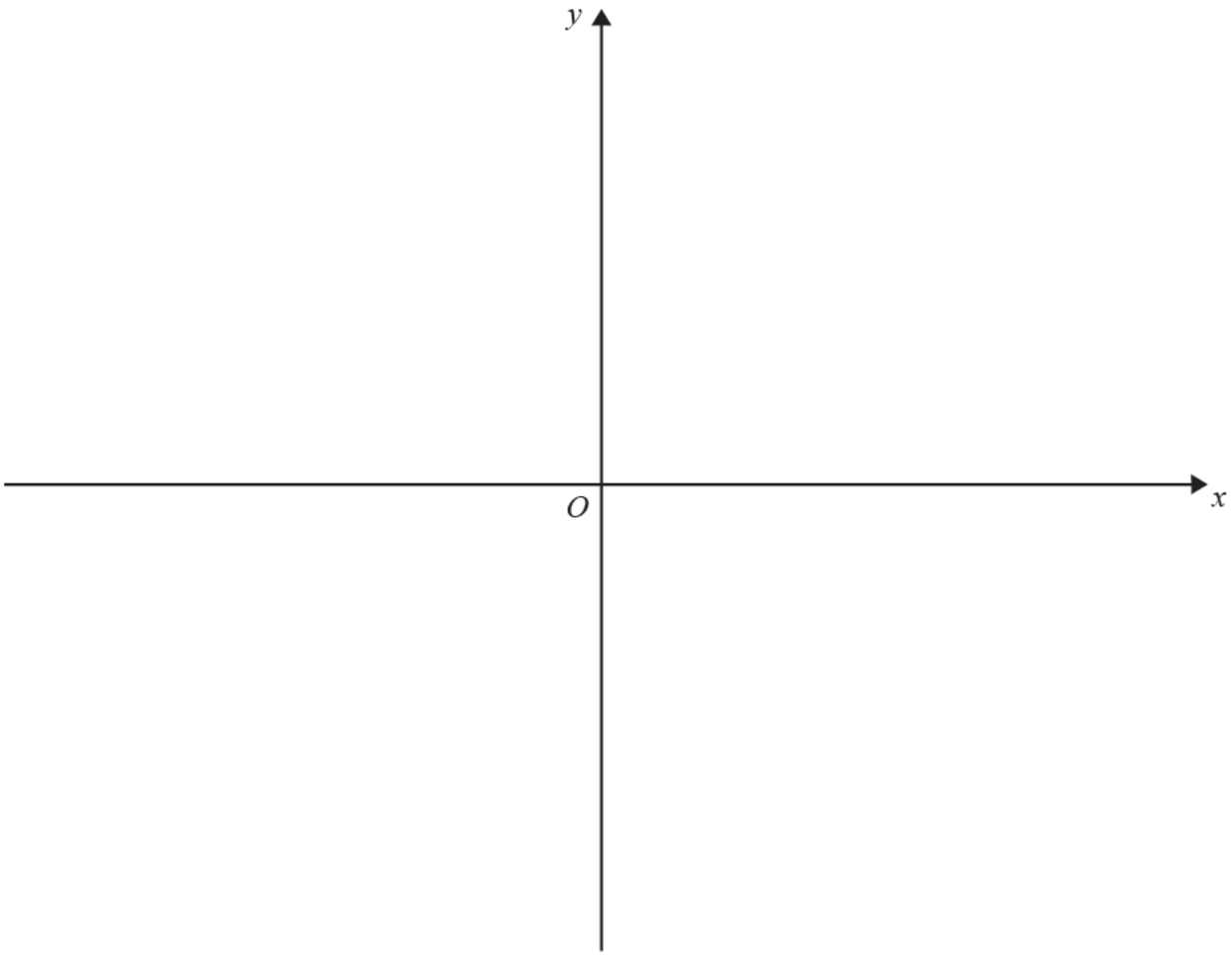
(3)

The line l is the tangent to C at the point on the curve where $x = 1$

(e) Find an equation of l, giving your answer in the form $y = mx + c$

(4)

Question 8 continued



Question 8 continued

Question 8 continued

(Total for Question 8 is 15 marks)