8 A curve C has equation

$$y = \frac{3x^2 - 1}{3x + 2} \qquad \text{where } x \neq -\frac{2}{3}$$

(a) Write down an equation of the asymptote to C which is parallel to the y-axis.

(1)

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

(8)

The curve crosses the y-axis at the point A.

(c) Write down the coordinates of A.

(1)

(d) On the axes on the opposite page, sketch C, showing clearly the asymptote parallel to the y-axis, the coordinates of the stationary points and the coordinates of A.

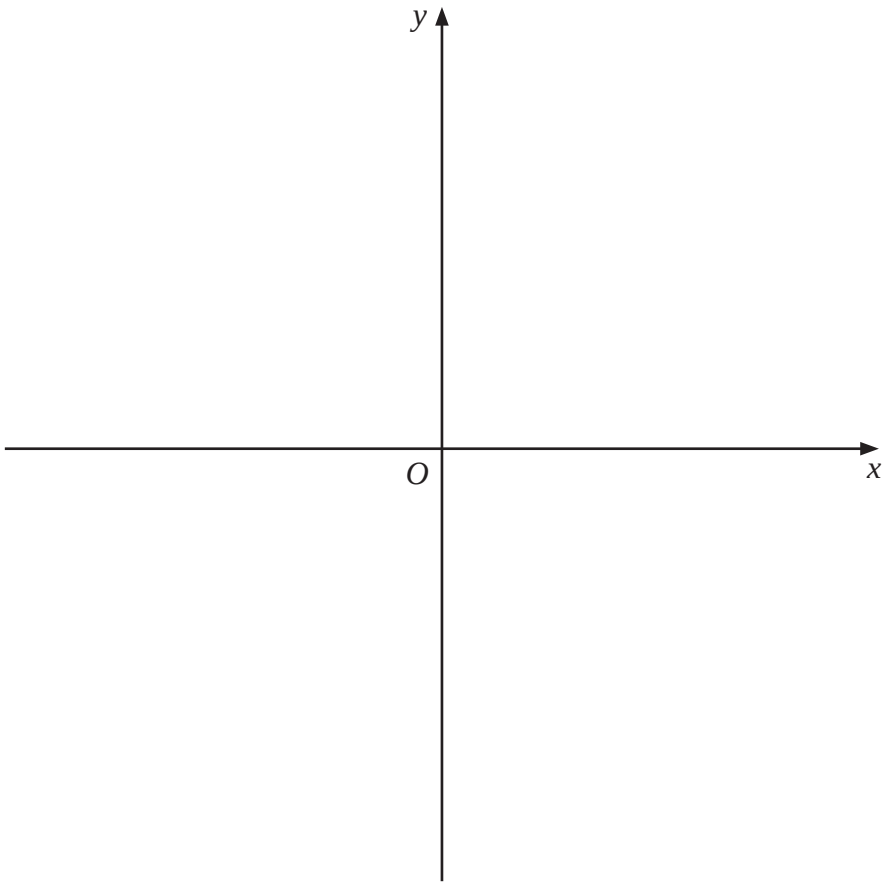
(3)

The line l is the normal to the curve at A.

(e) Find an equation of l.

(3)

Question 8 continued



Question 8 continued

Question 8 continued

(Total for Question 8 is 16 marks)