

8. (a) Sketch the curve with equation

$$y = k - \frac{1}{2x} \quad \text{where } k \text{ is a positive constant}$$

State, in terms of k , the coordinates of any points of intersection with the coordinate axes and the equation of the horizontal asymptote.

(3)

The straight line l has equation $y = 2x + 3$

Given that l cuts the curve in two distinct places,

(b) find the range of values of k , writing your answer in set notation.

(6)