AQA

Further Pure Mathematics 1

分类真题

2018-2022 册

A Level Clouds 出品

目录

Chapter 1

Loci, Graphs and Algebra

8   A hyperbola H_1 has equation

$$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$$

where a and b are positive constants.

H_1 intersects the x–axis at the points (6, 0) and (–6, 0)

The asymptotes of H_1 have equations

$$y = \frac{2}{3}x \quad \text{and} \quad y = -\frac{2}{3}x$$

8 (a)   Find the values of a and b.

[2 marks]

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$a =$ _____

$b =$ _____

8 (b) The hyperbola H_1 is translated by the vector $\begin{bmatrix} 4 \\ 0 \end{bmatrix}$ to give the hyperbola H_2

8 (b) (i) Write down the equation of H_2

[1 mark]

Answer _____

8 (b) (ii) Show that, if the line $y = mx$ intersects H_2, then the x–coordinates of the points of intersection must satisfy the equation

$$(4 - 9m^2)\, x^2 - 32x - 80 = 0$$

[3 marks]

8 (b) (iii) Find the equations of the tangents to H_2 which pass through the origin.

Answer _____

10　　A curve C has the equation

$$y = \frac{(x+5)\,(x+1)}{x\,(x-4)}.$$

10 (a)　State the equations of the asymptotes of C.

[3 marks]

Answer _____

10 (b) The line $y = k$ intersects the curve C.

10 (b) (i) Show that

$$4k^2 + 17k + 4 \geq 0$$

[4 marks]

10 (b) (ii) **Hence** find the coordinates of the stationary points of the curve C.

No credit will be given for solutions using differentiation.

[5 marks]

Answer _____