

Coordinate Geometry

Question Paper 9

Level	International A Level
Subject	Maths
Exam Board	CIE
Topic	Coordinate Geometry
Sub Topic	
Booklet	Question Paper 9

Time Allowed: 56 minutes

Score: /46

Percentage: /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	'77.5%	70%	62.5%	57.5%	45%	<45%

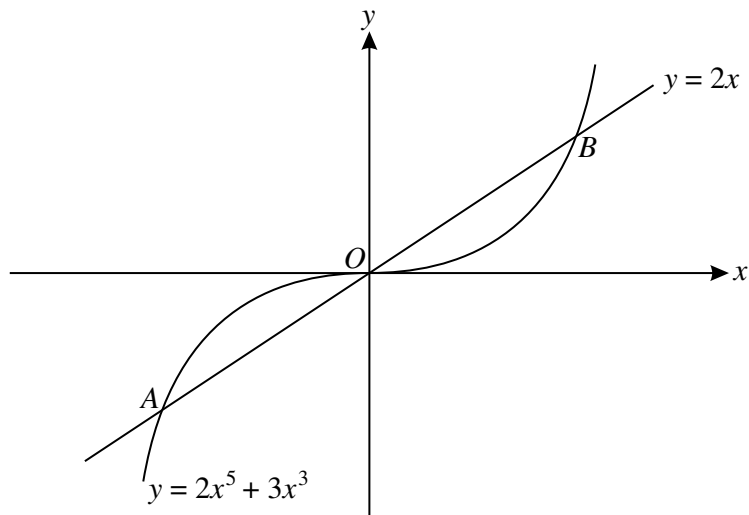
1 The straight line $y = mx + 14$ is a tangent to the curve $y = \frac{12}{x} + 2$ at the point P . Find the value of the constant m and the coordinates of P . [5]

2 The equation of a line is $2y + x = k$, where k is a constant, and the equation of a curve is $xy = 6$.

(i) In the case where $k = 8$, the line intersects the curve at the points A and B . Find the equation of the perpendicular bisector of the line AB . [6]

(ii) Find the set of values of k for which the line $2y + x = k$ intersects the curve $xy = 6$ at two distinct points. [3]

3



The diagram shows the curve $y = 2x^5 + 3x^3$ and the line $y = 2x$ intersecting at points A , O and B .

(i) Show that the x -coordinates of A and B satisfy the equation $2x^4 + 3x^2 - 2 = 0$. [2]

(ii) Solve the equation $2x^4 + 3x^2 - 2 = 0$ and hence find the coordinates of A and B , giving your answers in an exact form. [3]

- 4 The curve $y^2 = 12x$ intersects the line $3y = 4x + 6$ at two points.
Find the distance between the two points. [6]
- 5 The equation of a curve is $xy = 12$ and the equation of a line l is $2x + y = k$, where k is a constant.
- (i) In the case where $k = 11$, find the coordinates of the points of intersection of l and the curve. [3]
- (ii) Find the set of values of k for which l does not intersect the curve. [4]
- (iii) In the case where $k = 10$, one of the points of intersection is $P(2, 6)$. Find the angle, in degrees correct to 1 decimal place, between l and the tangent to the curve at P . [4]
- 6 The point A has coordinates $(-1, 6)$ and the point B has coordinates $(7, 2)$.
- (i) Find the equation of the perpendicular bisector of AB , giving your answer in the form $y = mx + c$. [4]
- (ii) A point C on the perpendicular bisector has coordinates (p, q) . The distance OC is 2 units, where O is the origin. Write down two equations involving p and q and hence find the coordinates of the possible positions of C . [5]