

Straight Lines

Question Paper 2

Level	A Level
Subject	Maths
Exam Board	OCR - MEI
Module	Core 1
Topic	Coordinate Geometry
Sub Topic	Straight Lines
Booklet	Question Paper 2

Time Allowed: 60 minutes

Score: /50

Percentage: /100

Grade Boundaries:

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

- 1 Point A has coordinates (4, 7) and point B has coordinates (2, 1).
- (i) Find the equation of the line through A and B. [3]
- (ii) Point C has coordinates (−1, 2). Show that angle $ABC = 90^\circ$ and calculate the area of triangle ABC. [5]
- (iii) Find the coordinates of D, the midpoint of AC.

Explain also how you can tell, without having to work it out, that A, B and C are all the same distance from D. [3]

- 2 A line has gradient 3 and passes through the point (1, −5). The point (5, k) is on this line. Find the value of k . [2]
- 3 Find the equation of the line which is parallel to $y = 5x - 4$ and which passes through the point (2, 13). Give your answer in the form $y = ax + b$. [3]
- 4 Find the coordinates of the point of intersection of the lines $x + 2y = 5$ and $y = 5x - 1$. [3]

- 5 Fig. 9 shows a trapezium ABCD, with the lengths in centimetres of three of its sides.

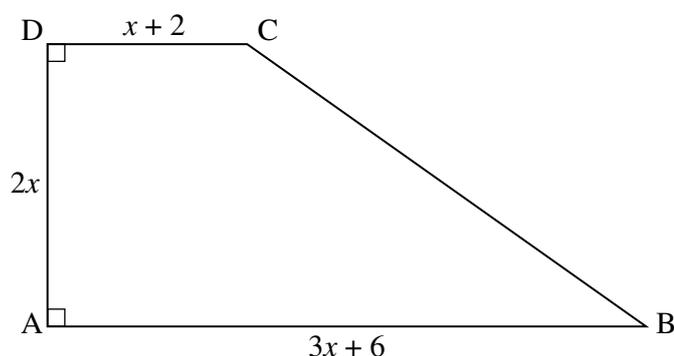


Fig. 9

This trapezium has area 140 cm^2 .

- (i) Show that $x^2 + 2x - 35 = 0$. [2]
- (ii) Hence find the length of side AB of the trapezium. [3]

- 6 The points A $(-1, 6)$, B $(1, 0)$ and C $(13, 4)$ are joined by straight lines.
- (i) Prove that the lines AB and BC are perpendicular. [3]
 - (ii) Find the area of triangle ABC. [3]
 - (iii) A circle passes through the points A, B and C. Justify the statement that AC is a diameter of this circle. Find the equation of this circle. [6]
 - (iv) Find the coordinates of the point on this circle that is furthest from B. [1]

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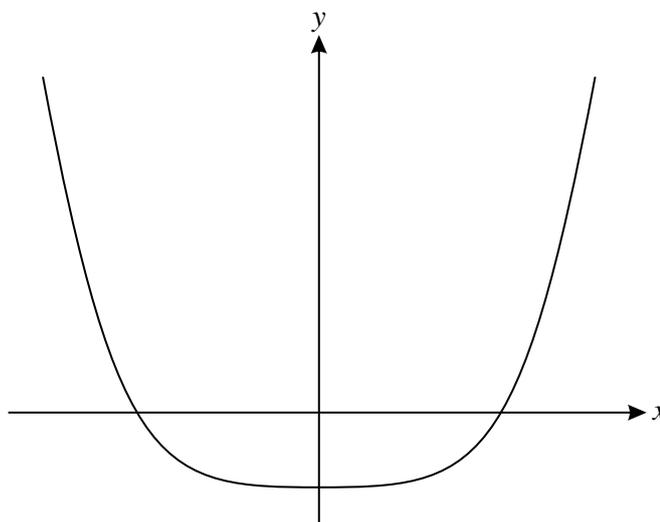


Fig. 13

Fig. 13 shows the curve $y = x^4 - 2$.

- (i) Find the exact coordinates of the points of intersection of this curve with the axes. [3]
 - (ii) Find the exact coordinates of the points of intersection of the curve $y = x^4 - 2$ with the curve $y = x^2$. [5]
 - (iii) Show that the curves $y = x^4 - 2$ and $y = kx^2$ intersect for all values of k . [2]
- 8 Find the equation of the line which is parallel to $y = 3x + 1$ and which passes through the point with coordinates $(4, 5)$. [3]