

Coordinate Geometry: Circles

Question Paper 1

Level	A Level
Subject	Maths
Exam Board	OCR
Topic	Coordinate Geometry & Graphs
Sub Topic	Coordinate Geometry: Circles
Booklet	Question Paper 1

Time Allowed: 53 minutes

Score: /44

Percentage: /100

- 1 A circle with centre C has equation $x^2 + y^2 - 10x + 4y + 4 = 0$.
- (i) Find the coordinates of C and the radius of the circle. [3]
 - (ii) Show that the tangent to the circle at the point $P(8, 2)$ has equation $3x + 4y = 32$. [5]
 - (iii) The circle meets the y -axis at Q and the tangent meets the y -axis at R . Find the area of triangle PQR . [4]
- 2 A circle with centre C has equation $(x - 2)^2 + (y + 5)^2 = 25$.
- (i) Show that no part of the circle lies above the x -axis. [3]
 - (ii) The point P has coordinates $(6, k)$ and lies inside the circle. Find the set of possible values of k . [5]
 - (iii) Prove that the line $2y = x$ does not meet the circle. [4]
- 3 A circle C has equation $x^2 + y^2 + 8y - 24 = 0$.
- (i) Find the centre and radius of the circle. [3]
 - (ii) The point $A(2, 2)$ lies on the circumference of C . Given that AB is a diameter of the circle, find the coordinates of B . [2]
- 4 A circle has equation $(x - 5)^2 + (y + 2)^2 = 25$.
- (i) Find the coordinates of the centre C and the length of the diameter. [3]
 - (ii) Find the equation of the line which passes through C and the point $P(7, 2)$. [4]
 - (iii) Calculate the length of CP and hence determine whether P lies inside or outside the circle. [3]
 - (iv) Determine algebraically whether the line with equation $y = 2x$ meets the circle. [5]