

Equation of a Circle and Tangents

For AQA GCSE Mathematics (8300) • Higher tier

Name _____

Total marks: **25**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method.

- 1** Circle the radius of the circle $x^2 + y^2 = 49$

[1 mark]

7

24.5

49

98

- 2** A circle has centre (0, 0) and diameter 10
Circle the equation of the circle.

[1 mark]

$x^2 + y^2 = 10$

$x^2 + y^2 = 20$

$x^2 + y^2 = 25$

$x^2 + y^2 = 100$

- 3** A circle has centre (0, 0) and radius 6
Write down the equation of the circle.

[1 mark]

Answer _____

- 4** A circle has centre (0, 0) and circumference 20π
Work out the equation of the circle.

[2 marks]

Answer _____

- 5 Does the point $(5, 3)$ lie inside, outside or on the circle $x^2 + y^2 = 30$?
You must show your working.

[2 marks]

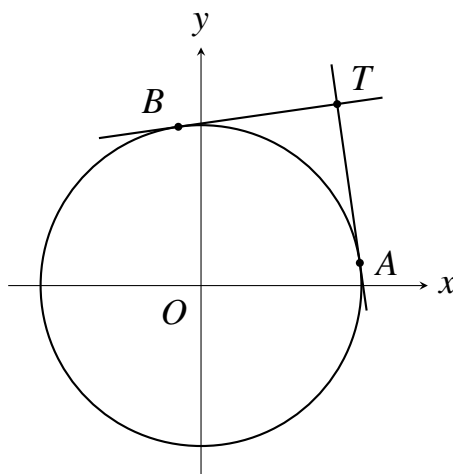
Answer _____

- 6 The point $P(-5, 1)$ lies on the circle $x^2 + y^2 = 26$
Work out the equation of the tangent to the circle at P .

[3 marks]

Answer _____

- 7 The points $A(7, 1)$ and $B(-1, 7)$ lie on the circle $x^2 + y^2 = 50$



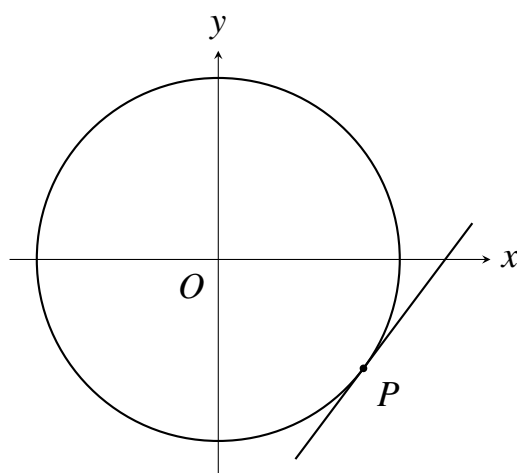
Not drawn accurately

The tangent at A and the tangent at B meet at the point T .
Work out the coordinates of T .
You must show your working.

[5 marks]

Answer (_____ , _____)

- 8 The diagram shows the circle $x^2 + y^2 = 100$
 P is the point $(8, -6)$.



Not drawn accurately

Show that the line $4x - 3y = 50$ is the tangent to the circle at P .

[4 marks]

9 The line $x + 2y = 10$ meets the circle $x^2 + y^2 = 25$ at the points A and B .

- (a) Work out the coordinates of A and B .
You must show your working.

[4 marks]

Answer _____

- (b) O is the origin and M is the midpoint of AB .
Show that OM is perpendicular to AB .

[2 marks]