

Equation of a Circle

For AQA Level 2 Certificate in Further Mathematics (8365)

Name _____

Total marks: **30**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method. You may use a calculator.

1 A circle has equation $(x + 6)^2 + (y - 1)^2 = 12$

(a) Write down the centre of the circle.

[1 mark]

Answer (_____ , _____)

(b) Work out the radius of the circle.

Give your answer as a surd in its simplest form.

[1 mark]

Answer _____

2 A circle has centre $(0, 0)$

The point $(-6, 3)$ lies on the circle.

Circle the equation of the circle.

[1 mark]

$x^2 + y^2 = 9$

$x^2 + y^2 = \sqrt{45}$

$x^2 + y^2 = 45$

$x^2 + y^2 = 81$

3 A circle has centre $(2, -3)$ and area 49π

Work out the equation of the circle.

[2 marks]

Answer _____

- 4 A circle has equation $(x + 1)^2 + (y - 4)^2 = 34$

For each point, tick whether it is inside, on or outside the circle.
You must show your working.

[3 marks]

	Inside	On	Outside
$A(2, 9)$	☐	☐	☐
$B(-4, 1)$	☐	☐	☐
$C(-6, 0)$	☐	☐	☐

- 5 The line segment joining $P(-4, 1)$ and $Q(2, 5)$ is a diameter of a circle.
Work out the equation of the circle.

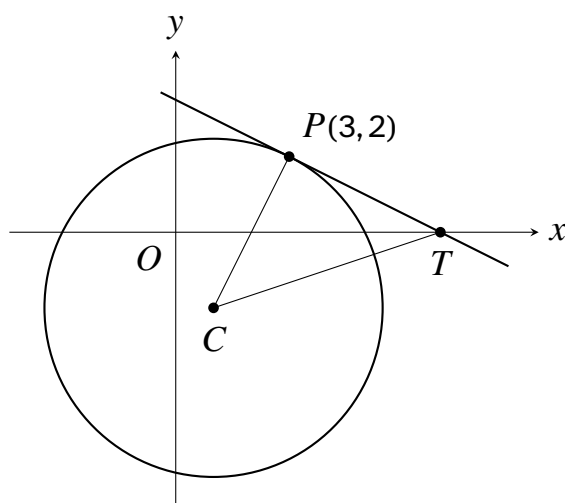
[3 marks]

Answer _____

- 6 The point $P(\sqrt{5}, 2)$ lies on the circle $x^2 + y^2 = 9$
Show that the tangent to the circle at P has equation $\sqrt{5}x + 2y = 9$

[4 marks]

- 7 The diagram shows the circle $(x - 1)^2 + (y + 2)^2 = 20$ with centre C . The point $P(3, 2)$ lies on the circle.



Not drawn accurately

The tangent to the circle at P crosses the x -axis at T .
Work out the area of triangle CPT .
You must show your working.

[5 marks]

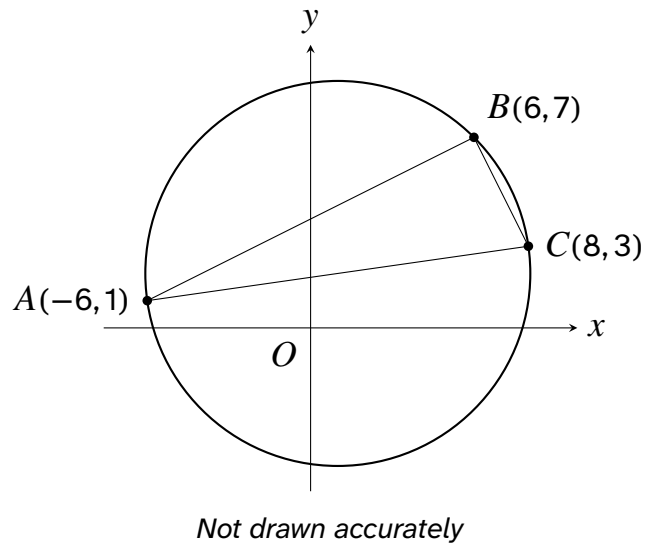
Answer _____ units²

- 8** $A(-1, 3)$ and $B(6, 4)$ are two points on a circle whose centre lies on the x -axis.
Work out the equation of the circle.

[5 marks]

Answer _____

- 9 $A(-6, 1)$, $B(6, 7)$ and $C(8, 3)$ are on the circumference of a circle.



- (a) Show that angle $ABC = 90^\circ$

[2 marks]

- (b) Work out the equation of the circle.

[3 marks]

Answer _____