

# A-Level Mathematics: AS - Circles

## Priority Learning

### Worksheet

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Name: \_\_\_\_\_ Date: \_\_\_\_\_

Question:	1	2	3	4	Total
Marks:	7	8	9	12	36
Score:					

#### Aims of this worksheet:

- Understand the general form of a circle,
- To be able to calculate the radius and centre of the circle,
- To be able to give the equation of the tangent at a certain point.

1. The circle  $C$  has centre  $A(4, 6)$  and passes through the point  $B(3, 8)$

(a) Find an equation for  $C$

(3 marks)

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The line  $l_1$  is the tangent to  $C$  at the point  $B$ .

(b) Find an equation for  $l_1$ ,

(4 marks)

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2. The circle  $C$ , with centre at the point  $A$ , has equation  $x^2 + y^2 + 6x - 10y + 14 = 0$ .

(a) Find the coordinates of  $A$  and the radius of  $C$

(4 marks)

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(b) Given that a line  $l$  is tangent to  $C$  at the point  $B$  and it has the gradient  $\frac{5}{3}$ , find an equation of the line that passes through  $A$  and  $B$ .

(4 marks)

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4. The circle  $C$  has the equation

$$x^2 + y^2 - 15x + 7y + 18 = 0$$

- (a) Find the coordinates of the mid-point and find the radius of the circle, leaving your answers in its simplest form. (5 marks)

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- (b) Given that a point  $P$  lies on the circle and it has the  $x$ -coordinate 13, find the possible  $y$ -coordinates of point  $P$ . (3 marks)

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