

Equation of a circle

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Worked example

Write down the equation of the circle with centre $(6, 7)$ and radius 2

Write down the equation of the circle with centre $(-6, 7)$ and radius 3

Write down the equation of the circle with centre $(-6, -7)$ and radius 4

Write down the equation of the circle with centre $(6, -7)$ and radius 5

Your turn

Write down the equation of the circle with centre $(4, 5)$ and radius 9

$$(x - 4)^2 + (y - 5)^2 = 81$$

Write down the equation of the circle with centre $(-4, 5)$ and radius 8

$$(x + 4)^2 + (y - 5)^2 = 64$$

Write down the equation of the circle with centre $(-4, -5)$ and radius 7

$$(x + 4)^2 + (y + 5)^2 = 49$$

Write down the equation of the circle with centre $(4, -5)$ and radius 6

$$(x - 4)^2 + (y + 5)^2 = 36$$

Worked example

Write down the equation of the circle with centre $(0, 0)$ and radius 3

Write down the equation of the circle with centre $(0, 3)$ and radius 2

Write down the equation of the circle with centre $(-2, 0)$ and radius $2\sqrt{3}$

Your turn

Write down the equation of the circle with centre $(0, 0)$ and radius 5

$$x^2 + y^2 = 25$$

Write down the equation of the circle with centre $(0, -5)$ and radius 4

$$x^2 + (y + 5)^2 = 16$$

Write down the equation of the circle with centre $(4, 0)$ and radius $4\sqrt{5}$

$$(x - 4)^2 + y^2 = 80$$

Worked example

A line segment AB is the diameter of a circle, where A and B have coordinates $(5,8)$ and $(-7,4)$ respectively. Determine the equation of the circle.

Your turn

A line segment AB is the diameter of a circle, where A and B have coordinates $(4,7)$ and $(-8, 3)$ respectively. Determine the equation of the circle.

$$(x + 2)^2 + (y - 5)^2 = 40$$

Worked example

A circle, centre C, has radius 10.

The circle passes through the points A (-13, 4) and (3, 4)

The x-axis is a tangent to the circle.

Work out the equation of the circle.

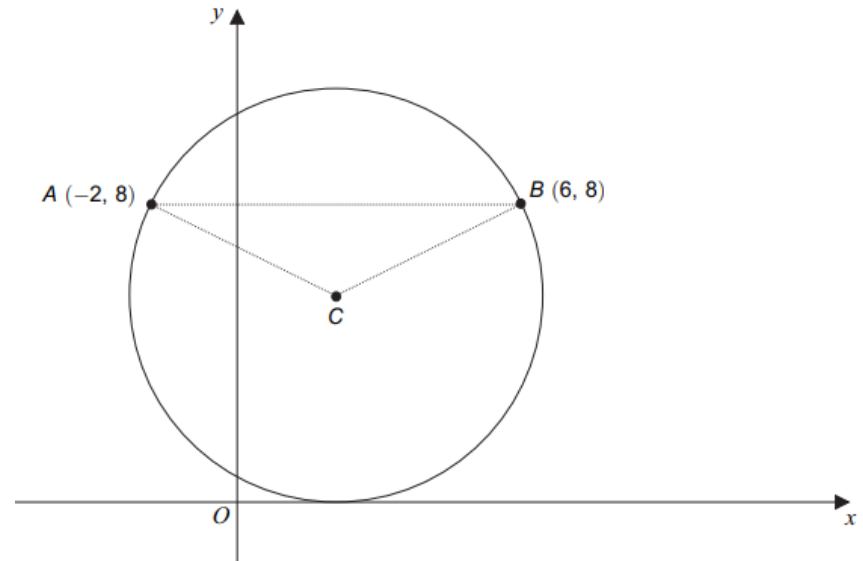
Your turn

The sketch shows a circle, centre C, radius 5.

The circle passes through the points A (-2, 8) and (6, 8)

The x-axis is a tangent to the circle.

Work out the equation of the circle.



$$(x - 2)^2 + (y - 5)^2 = 25$$

Worked example

Find the centre and radius of the circle with equation

$$x^2 + y^2 + 8x - 6y - 2 = 0$$

Your turn

Find the centre and radius of the circle with equation

$$x^2 + y^2 - 14x + 16y - 12 = 0$$

Centre $(7, -8)$, radius $5\sqrt{5}$