

The equation of a circle given its centre, a b and its radius, r is: $(x - a)^2 + (y - b)^2 = r^2$.

If A is the point $(-6, 5)$, B is the point $(2, 7)$ and AB is the diameter of the circle.

Find the equation of this circle.

The centre of the circle is the midpoint of AB . For the x coordinate add -6 and 2 , together to get -4 and divide by two.

For the y coordinate, add 5 and 7 , together to get 12 and divide by two.

This leaves you with the coordinate $(-2, 6)$.

To find the radius use the distance formula, use point A or B and the centre.

For point A , radius equals the square root of $(-6 - (-2))^2 + (5 - 6)^2$ which is the square root of $16 + 1$, which equals the square root of 17 .

The equation of this circle is $(x + 2)^2 + (y - 6)^2 = 17$.

Remember surd law $\sqrt{a} \times \sqrt{a} = a$ so $\sqrt{17}^2 = 17$.

The other form of the equation of a circle where the centre is $(-g, -f)$ and the radius is the square root of $g^2 + f^2 - c$ is: $x^2 + y^2 + 2gx + 2fy + c = 0$.

Circle C_1 has an equation $x^2 + y^2 - 6x - 2y - 26 = 0$.

Circle C_2 has a centre $(-4, -2)$. If the radius of each circle is equal, find the equation of circle C_2 .

Find the radius of circle two using the equation of circle one. $2g = -6$ so $g = -3$.

$2f = -2$ so $f = -1$.

The radius is calculated as the square root of $g^2 + f^2 - c$, $\sqrt{9 + 1 + 26}$.

The radius is 6 .

Substitute the centre of circle two and its radius into the circle formula to get its equation: $(x + 4)^2 + (y + 2)^2 = 36$.

Remember, the equations of a circle are given on the formula sheet.