Section 2: Circles

Exercise level 1

1. Find, in the form $x^2 + y^2 + px + qy = c$, the equation for each of the following circles.
   (i) centre (0, 0), radius 6
   (ii) centre (3, 1), radius 5
   (iii) centre (-2, 5), radius 1
   (iv) centre (0, -4), radius 3

2. For each of these circles, write down the coordinates of the centre and the radius.
   (i) $x^2 + y^2 = 100$
   (ii) $(x-2)^2 + (y-7)^2 = 16$
   (iii) $(x+3)^2 + (y-4)^2 = 4$
   (iv) $(x+4)^2 + (y+5)^2 = 20$

3. For each of these circles, find the coordinates of the centre and the radius.
   (i) $x^2 + y^2 + 4x - 5 = 0$
   (ii) $x^2 + y^2 - 6x + 10y + 20 = 0$
   (iii) $x^2 + y^2 - 2x - 3y + 3 = 0$

4. The point C is (4, -2) and the point A is (6, 3).
   Find the equation of the circle centre C and radius CA.

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5. The points A (2, 0) and B (6, 4) form the diameter of a circle. Find the equation of the circle.

6. From the following equations, which represent the Cartesian equation of a circle? For each circle, find the coordinates of the centre, and find the radius.
   (i) $x^2 + y^2 - 4x + 6y = 51$
   (ii) $x^2 + 2y^2 - 3x = 11$
   (iii) $4x^2 + 4y^2 = 65$
   (iv) $8x^2 + 8y^2 - 48x - 16y = -104$