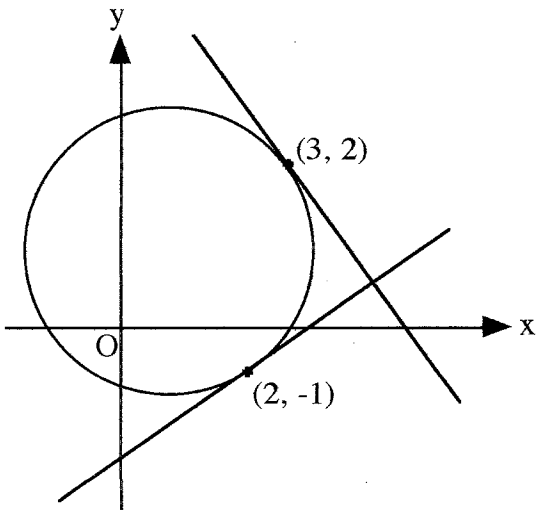
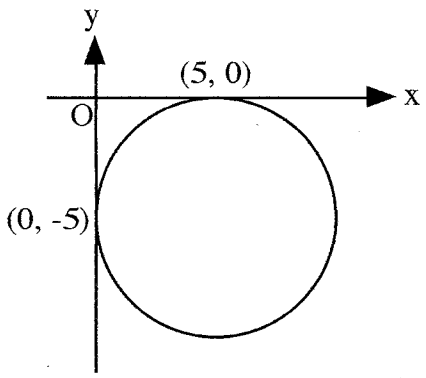
CIRCLES

1 Find the equation of the circle with centre the origin passing through the point (-6, 8).

2 The circle shown in the diagram has equation $(x - 1)^2 + (y - 1)^2 = 5$. Tangents are drawn at the points (3, 2) and (2, -1).

Write down the coordinates of the centre of the circle and hence show that the tangents are perpendicular to each other.



3 

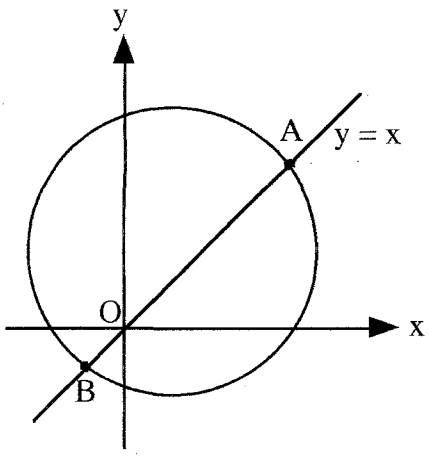
A circle touches the x-axis at (5, 0) and the y-axis at (0, -5).

Find the equation of the circle.

4 Explain why $x^2 + y^2 + 2x + 3y + 5 = 0$ does NOT represent a circle.

5 Find the equation of the tangent to the circle at the point (3, 4) on the circle $x^2 + y^2 + 2x - 4y - 15 = 0$.

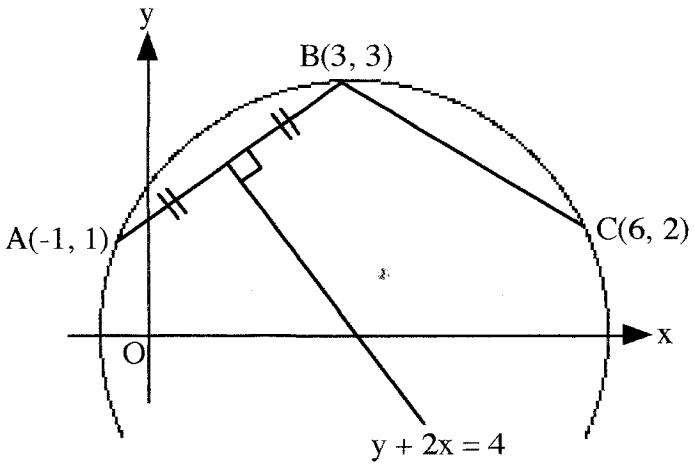
6 The straight line $y = x$ cuts the circle $x^2 + y^2 - 6x - 2y - 24 = 0$ at A and B.



(a) Find the coordinates of A and B.

(b) Find the equation of the circle which has AB as a diameter.

7 (a) In the diagram, A is the point (-1, 1), B(3, 3) and C is (6, 2). The perpendicular bisector of AB has equation $y + 2x = 4$. Find the equation of the perpendicular bisector of BC.



(b) Find the centre and the equation of the circle which passes through A, B and C.