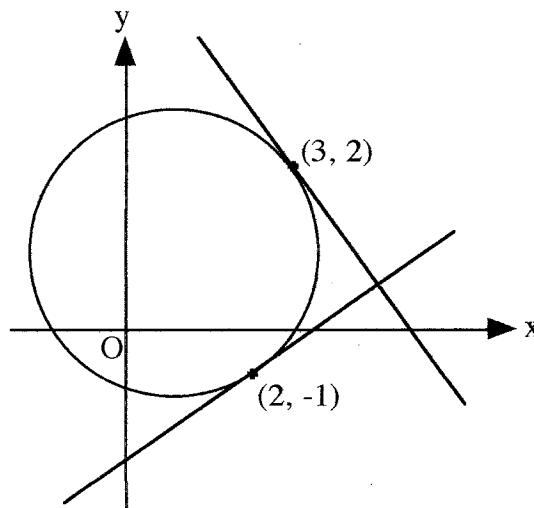


CIRCLES

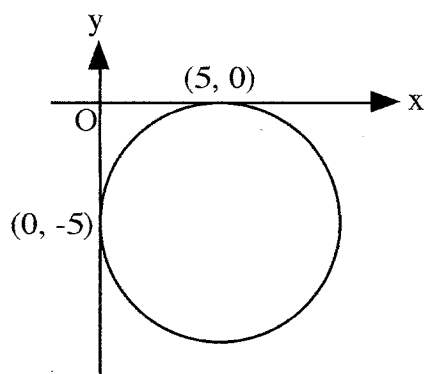
- 1 Find the equation of the circle with centre the origin passing through the point $(-6, 8)$.

- 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



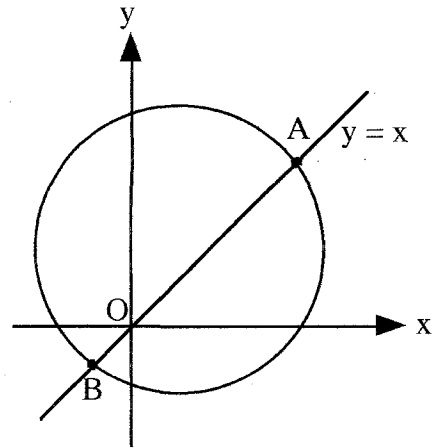
A circle touches the x-axis at $(5, 0)$ and the y-axis at $(0, -5)$.

Find the equation of the circle.

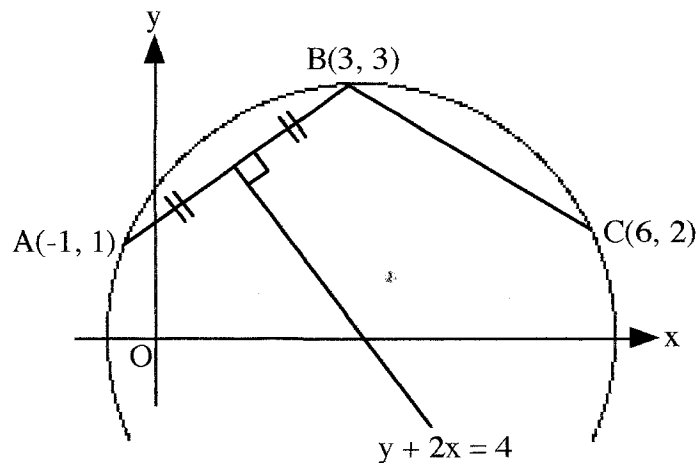
- 4 Explain why $x^2 + y^2 + 2x + 3y + 5 = 0$ does NOT represent a circle.
- 5 Find the equation of the tangent to the circle at the point $(3, 4)$ on the circle $x^2 + y^2 + 2x - 4y - 15 = 0$.

- 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.