

Finding the equation of a tangent to a circle

A LEVEL LINKS

Scheme of work: 2a. Straight-line graphs, parallel/perpendicular, length and area problems

Practice question

- 1 The circle C , with centre at the point A , has equation $x^2 + y^2 - 10x + 9 = 0$.

Find

- (a) the coordinates of A , (2)
- (b) the radius of C , (2)
- (c) the coordinates of the points at which C crosses the x -axis. (2)

Given that the line l with gradient $\frac{7}{2}$ is a tangent to C , and that l touches C at the point T ,

- (d) find an equation of the line which passes through A and T .

Answer

- 1 (a) Centre $(5, 0)$ (or $x = 5, y = 0$)
- (b) $(x \pm a)^2 \pm b \pm 9 + (y \pm c)^2 = 0 \Rightarrow r^2 = \dots$ or $r = \dots$, Radius = 4
- (c) $(1, 0), (9, 0)$ Allow just $x = 1, x = 9$
- (d) Gradient of $AT = -\frac{2}{7}$

$$y = -\frac{2}{7}(x - 5)$$