

CIRCLE (Q 1, PAPER 2)

2001

- 1 (a) A circle with centre $(-3, 7)$ passes through the point $(5, -8)$. Find the equation of the circle.
- 1 (b) The equation of a circle is $(x+1)^2 + (y-8)^2 = 160$. The line $x - 3y + 25 = 0$ intersects the circle at the points p and q .
- (i) Find the co-ordinates of p and the co-ordinates of q .
- (ii) Investigate if $[pq]$ is a diameter of the circle.
- 1 (c) The circle $x^2 + y^2 + 2gx + 2fy + c = 0$ passes through the points $(3, 3)$ and $(4, 1)$. The line $3x - y - 6 = 0$ is a tangent to the circle at $(3, 3)$.
- (i) Find the real numbers g, f and c .
- (ii) Find the co-ordinates of the point on the circle at which the tangent parallel to $3x - y - 6 = 0$ touches the circle.

ANSWERS

- 1 (a) $(x+3)^2 + (y-7)^2 = 289$ or $x^2 + y^2 + 6x - 14y - 231 = 0$
- 1 (b) (i) $p(-13, 4), q(11, 12)$ (ii) Yes
- 1 (c) (i) $g = -\frac{9}{2}, f = -\frac{5}{2}, c = 24$ (ii) $(6, 2)$