THE CIRCLE (Q 3, PAPER 2)

2003

- 3 (a) The circle *C* has equation $x^2 + y^2 = 25$.
 - (i) Verify that the point (-4, 3) is on the circle *C*.
 - (ii) Write down the coordinates of a point that lies outside *C* and give a reason for your answer.
 - (b) The line x 2y + 5 = 0 intersects the circle $x^2 + y^2 = 10$ at the points *a* and *b*.
 - (i) Find the co-ordinates of a and the co-ordinates of b.
 - (ii) Draw a coordinate diagram on graph paper, showing the line, the circle and the points of intersection.
 - (c) The circle *K* has equation (x+2)² + (y-3)² = 25. *p* and *q* are the endpoints of a diameter of *K* and *pq* is horizontal.
 (i) Find the co-ordinates of *p* and the co-ordinates of *q*.
 - (ii) Hence, or otherwise, write down the equations of the two vertical tangents to K.
 - (iii) Another circle also has these two vertical lines as tangents. The centre of this circle is on the *x*-axis. Find the equation of this circle.

