## 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 $x-2 y+5=0$ 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 $p q$ 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.

## Answers

3 (b) (i) $a(-3,1), b(1,3)$
(ii)

(c) (i) $p(-7,3), q(3,3)$
(ii) $x=-7, x=3$
(iii) $(x+2)^{2}+y^{2}=25$

