## The Circle (Q 3, Paper 2)

2007
3 (a) The circle $C$ has centre $(0,0)$ and radius 4.
(i) Write down the equation of $C$.
(ii) Verify that the point $(3,2)$ lies inside the circle $C$.
(b) The line $x-3 y=0$ intersects the circle $x^{2}+y^{2}=10$ at the points $a$ and $b$.
(i) Find the coordinates of $a$ and the coordinates of $b$.
(ii) Show that [ab] is a diameter of the circle.
(c) The circle $K$ has equation $(x-5)^{2}+(y+1)^{2}=34$.
(i) Write down the radius of $K$ and the coordinates of the centre of $K$.
(ii) Verify that the point $(10,-4)$ is on the circle.
(iii) $T$ is a tangent to the circle at the point $(10,-4)$.
$S$ is another tangent to the circle and $S$ is parallel to $T$.
Find the coordinates of the point at which $S$ is a tangent to the circle.

## Answers

3 (a) (i) $x^{2}+y^{2}=16$
(b) (i) $a(1,3), b(-1,-3)$
$\begin{array}{ll}\text { (c) (i) } \sqrt{34},(5,-1) & \text { (iii) }(0,2)\end{array}$

