THE CIRCLE (Q 3, PAPER 2)

2007

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

Answers 3 (a) (i) $x^2 + y^2 = 16$ (b) (i) a(1, 3), b(-1, -3)(c) (i) $\sqrt{34}, (5, -1)$ (iii) (0, 2)