## The Circle (Q 3, Paper 2)

## Lesson No. 2: The Harder Circle

## 2005

3 (c) The circle $K$ has equation $(x+4)^{2}+(y-3)^{2}=36$.
(i) Write down the coordinates of the centre of $K$.
(ii) The point $(2,3)$ is one end-point of a diameter of $K$.

Find the coordinates of the other end-point.
(iii) The point $(-4, y)$ is on the circle $K$. Find the two values of $y$.

2004
3 (c) $K$ is a circle with centre ( $-2,1$ ). It passes through the point $(-3,4)$.
(i) Find the equation of $K$.
(ii) The point $(t, 2 t)$ is on the circle $K$.

Find the two possible values of $t$.

2001
3 (a) The circle $S$ has equation $(x-3)^{2}+(y-4)^{2}=25$.
(i) Write down the centre and the radius of $S$.
(ii) The point $(k, 0)$ lies on $S$. Find the two real values of $k$.

## 1999

3 (b) The points $(-1,-1)$ and $(3,-3)$ are the end points of a diameter of a circle $S$.
(i) Find the coordinates of the centre of $S$.
(ii) Find the radius length of $S$.
(iii) Find the equation of $S$.

## 1997

3 (c) $C$ is the circle with centre $(-1,2)$ and radius 5 .
Write down the equation of $C$.
The circle $K$ has equation $(x-8)^{2}+(y-14)^{2}=100$.
Prove that the point $p(2,6)$ is on $C$ and on $K$.
Show that $p$ lies on the line which joins the centres of the two circles.

## 1996

3 (b) The points $(1,0)$ and $(4,4)$ are the end points of a diameter of a circle $C$.
(i) Find the coordinates of the centre of $C$.
(ii) Find the radius length of $C$.
(iii) Find the equation of $C$.
Answers
20053 (c) (i) $(-4,3)$
(ii) $(-10,3) \quad$ (iii) $y=-3,9$
20043
(c) (i) $(x+2)^{2}+(y-1)^{2}=10$
(ii) $t= \pm 1$
20013
3 (a) (i) $(3,4), r=5$
(ii) $k=0,6$
19993 (b) (i) (1, - 2)
(ii) $\sqrt{5}$
(iii) $(x-1)^{2}+(y+2)^{2}=5$
19973 (c) $(x+1)^{2}+(y-2)^{2}=25$
19963 (b) (i) ( $\frac{5}{2}, 2$ )
(ii) $\frac{5}{2}$
(iii) $\left(x-\frac{5}{2}\right)^{2}+(y-2)^{2}=\frac{25}{4}$

