The Circle (Q 3, Paper 2)

Lesson No. 6: Right-angled triangles inside circles

2006

3 (b) The vertices of a right-angled triangle are $p(1, 1)$, $q(5, 1)$ and $r(1, 4)$.
The circle K passes through the points p, q and r.

(i) On a coordinate diagram, draw the triangle pqr.
Mark the point c, the centre of K, and draw K.

(ii) Find the equation of K.

(iii) Find the equation of the image of K under the translation $(5, 1) \rightarrow (1, 4)$.

2004

3 (b) A circle has equation $x^2 + y^2 = 13$.

The points $a(2, -3)$, $b(-2, 3)$ and $c(3, 2)$ are on the circle.

(i) Verify that $[ab]$ is a diameter of the circle.

(ii) Verify that $\angle acb$ is a right angle.

2002

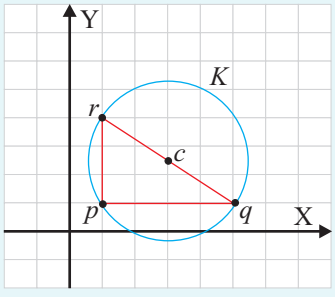
3 (c) $a(-5, 1)$, $b(3, 7)$ and $c(9, -1)$ are three points.

(i) Show that the triangle abc is right-angled.

(ii) Hence, find the centre of the circle that passes through a, b and c and write down the equation of the circle.

Answers

2006 3 (b) (i)



(ii) $(x-3)^2 + (y-\frac{5}{2})^2 = \frac{25}{4}$

(iii) $(x+1)^2 + (y-\frac{11}{2})^2 = \frac{25}{4}$

2002 3 (c) (ii) $(2, 0)$, $(x-2)^2 + y^2 = 50$