THE CIRCLE (Q 3, PAPER 2)

2011

3. (a) A circle has equation $x^2 + y^2 = 81$.

     (i) Write down the co-ordinates of the centre of the circle.

     (ii) Find the radius of the circle.

  (b) The circle c has equation $(x-3)^2 + (y+1)^2 = 17$.

     (i) Verify that the point $(7, -2)$ is on c.

     (ii) On a co-ordinate diagram, mark the centre of c and draw c.

     (iii) Find, using algebra, the co-ordinates of the two points at which c intersects the x-axis.

  (c) The points $A(-1, 2)$, $B(-3, -4)$, $C(3, -6)$ and $D(5, 0)$ are the vertices of a square. The sides of the square are tangents to the circle s, as shown.

     (i) Find the co-ordinates of the centre of s.

     (ii) Find the equation of s.

     (iii) The circle $(x+4)^2 + y^2 = 10$ is the image of s under the translation $(p, q) \rightarrow (6, 5)$. Find the value of p and the value of q.
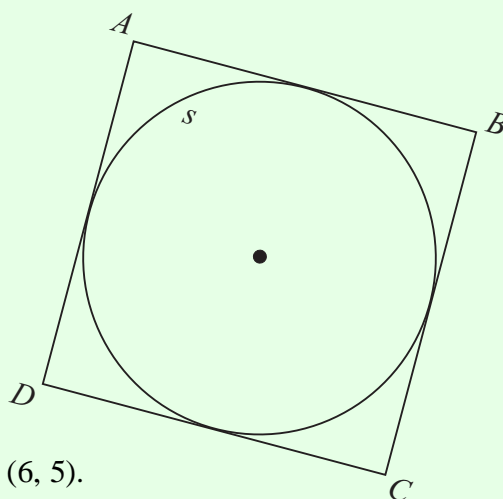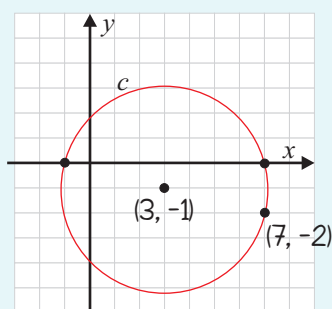

ANSWERS

3 **(a) (i)** $(0, 0)$ **(ii)** 9

    (b) (ii)   **(iii)** $(7, 0)$, $(-1, 0)$

    (c) (i) $(1, -2)$ **(ii)** $(x-1)^2 + (y+2)^2 = 10$ **(iii)** $p = 11$, $q = 3$