

CIRCLE (Q 1, PAPER 2)

1997

1 (a) The equation of a circle is

$$(x + 7)(x + 3) + (y - 2)(y + 2) = 0.$$

Find the centre and radius length of the circle.

(b) Prove that the equation of the tangent to the circle $x^2 + y^2 = r^2$ at the point (x_1, y_1) on the circle is

$$xx_1 + yy_1 = r^2.$$

(c) The x axis is a tangent to the circle $x^2 + y^2 + 2gx + 2fy + c = 0$.

Show that

$$g^2 = c.$$

The x axis is a tangent to a circle K at the point $(3, 0)$.

The point $(-1, 4) \in K$.

Find the equation of K .

ANSWERS

1 (a) $(-5, 0), r = \sqrt{8}$

(c) $x^2 + y^2 - 6x - 8y + 9 = 0$