THE CIRCLE (Q 3, PAPER 2)

2000

3 (a) The circle *C* has equation $x^2 + y^2 = 16$.
   (i) Write down the length of the radius of *C*.

   (ii) Show, by calculation, that the point (3, 1) is inside the circle.

   (b) (i) Find the slope of the tangent to the circle $x^2 + y^2 = 29$ at the point (2, 5).

   (ii) Hence, find the equation of the tangent.

   (c) (i) The end points of a diameter of a circle are (– 2, –3) and (– 4, 3).
       Find the equation of the circle.

   (ii) The circle cuts the *y*-axis at the points *a* and *b*. Find |*ab*|.

   (iii) *c* and *d* are points on the circle such that *abcd* is a rectangle.
       Find the area of the rectangle *abcd*.

ANSWERS

3 (a) (i) $r = 4$

   (b) (i) $-\frac{2}{5}$ (ii) $2x + 5y - 29 = 0$

   (c) (i) $(x+3)^2 + y^2 = 10$ (ii) 2   (iii) 12 units^2