Higher Homework: The Circle

1) Find the equation of the circle with centre (-1, 5) and Passing through the point (5, 13)

2) State the centre and radius of the circle
$$x^2 + y^2 + 8x - 10y - 5 = 0$$

3) Show that $y = -2x + 10$ is a tangent to the circle $x^2 + y^2 + 20y + 20 = 0$.

4) Verify that the point P(3,4) lies on the circumference of the circle $x^2 + y^2 + 2x - 4y - 15 = 0$.
Find the equation of the tangent to the circle at P.

5) A symmetrical logo design is based on two circles. Relative to the axes shown, the equation of the larger circle is
$x^2 + y^2 - 20x - 24y + 195 = 0$.

Find the equation of the smaller circle.
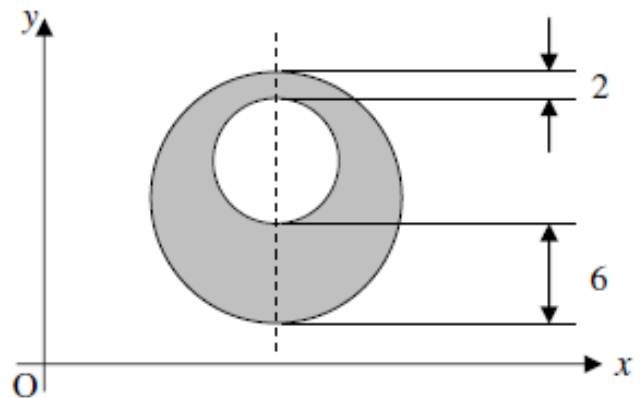
6) Triangle ABC has vertices A(-1, -6), B(3, 4) and C(-3, 7).

Find the:

(a) Equation of the altitude from A

(b) Equation of the median from C

(c) Coordinates of the point of intersection between the altitude and median above.