

Coordinate Geometry with Circles.

These questions rely heavily on completing the square to find the centre and radius of the specified circle

$$\text{eg } x^2 + y^2 - 6x + 10y + 9 = 0$$

$$\text{to } (x-3)^2 + (y+5)^2 = 25$$

So centre at $(3, -5)$ and radius = 5.

They also set problems where a straight line intersects the circle or is a tangent to. This involves solving the equation for the line simultaneously with the quadratic for the circle. If the line is to be a tangent then the discriminant of the resulting quadratic is zero to just give one solution.

It is helpful in these problems to draw a rough sketch to enable a "clear head". Also in some circumstances a more geometrical solution suggests itself rather than a lot of algebra. See Worked Examples 1 and 4.