The Equation of a Circle

Fundamental GCSE Knowledge

Sketch the following circles, labelling the radius carefully

$x^2 + y^2 = 1$	$x^2 + y^2 = 16$	$x^2 + y^2 = 49$
$x^2 + y^2 = 10$	$x^2 + y^2 = 0.01$	$x^2 + y^2 = 40$

Give the equation of the following circles which have the centre as their origin

A radius of 8	A radius of 12
A radius of $\sqrt{15}$	A radius of $3\sqrt{2}$

For each of the following, find where the line and the circle intersect.

$x^2 + y^2 = 25$ $y = x + 1$	$x^2 + y^2 = 100$ $y = x + 2$
$x^2 + y^2 = 18$ $x + y = 6$	$x^2 + y^2 = 25$ $y = 2x + 1$

Sketch the first two pairs of equations on separate axes to verify your solutions

Enrichment

For a circle with centre (a, b) and radius r the equation is given by $(x - a)^2 + (y - b)^2 = r^2$

Find the centre and radius of the following circles, sketching your solution

$(x - 2)^2 + (y + 3)^2 = 25$	$(x + 1)^2 + (y - 3)^2 = 36$	$x^2 + (y + 1)^2 = 100$
$x^2 + 4x + y^2 + 6y = 12$	$x^2 + 10x + y^2 + 8x = 8$	$x^2 - 6x + y^2 + 2y = 0$