

# Plane Geometry

## Circle

Find the equation of the circle whose centre is  $(2, -3)$  and which passes through the intersection of the lines

$$3x + 2y = 11$$

$$2x + 3y = 4$$

Given lines are

$$3x + 2y - 11 = 0 \quad \text{--- ①}$$

$$2x + 3y - 4 = 0 \quad \text{--- ②}$$

Sol

$$\frac{x}{-8+33} = \frac{-y}{-12+22} = \frac{1}{9-4}$$

$$\frac{x}{25} = \frac{y}{-10} = \frac{1}{5}$$

$$x = \frac{25}{5} = 5, \quad \frac{y}{-10} = \frac{1}{5}$$

$$x = 5$$

$$y = \frac{-10}{5} = -2$$

Point of intersection of lines  $(5, -2)$

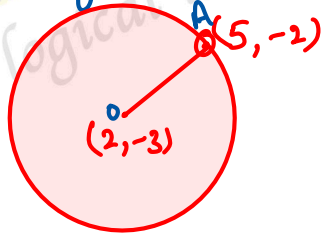
$\therefore$  Circle passes through point of intersection of ① & ②

$\therefore$  Circle passes through  $(5, -2)$ .

$r =$  distance of OA

$$\sqrt{(5-2)^2 + (-2+3)^2}$$

$$= \sqrt{9+1} = \sqrt{10}$$



$$(x - 2)^2 + (y + 3)^2 = (\sqrt{10})^2$$

$$x^2 + 4 - 4x + y^2 + 9 + 6y = 10$$

$$x^2 + y^2 - 4x + 6y + 3 = 0$$



OMG! MATHS }  
The poetry of logical ideas.