

## Past years questions

1) Intercept made by the circle  $x^2+y^2-5x-13y-14=0$  on the x-axis and y axis is

a) 9,13   b) 5,13   c) 9,15   d) none of these

**sol)** length of the x-intercept =  $2(g^2-c)^{1/2}$

length of the Y-intercept =  $2(f^2-c)^{1/2}$

2) The circle  $x^2+y^2-4x-8y-5=0$  intersects the line  $3x-4y=m$  at two distinct points if

a)  $-85 < m < -35$    b)  $-35 < m < 15$    c)  $15 < m < 65$    d)  $35 < m < 85$

**Sol)**  $(x-2)^2 + (y-4)^2 = 5^2$  is the circle equation

Perpendicular distance from (2,4) to  $3x-4y-m=0$  is  $P \Rightarrow 0 < |p| < 5$

$$(6-16-m)/5 < 5 \Rightarrow |m+10| < 25 \Rightarrow -35 < m < 15.$$

3) The circle  $x^2+y^2-6x-8y+(25-a^2)=0$  touches the x-axis then the value of x is

a) +4,-4   b) 0   c) +3,-3   d) +2,-2

**Sol)** Centre of circle is C(3,4)

$$\text{Radius } r = (9+16-25+a^2)^{1/2}$$

$$\text{It touches the x axis so } r = (a^2)^{1/2} = 4$$

On solving we get  $a = +4, -4$ .

