

a) If this circle passes through (-3,3)

slope of AF x slope of BF = -1
 (Since Angles in a semi circle is a right angle, so AF is perpendicular to BF)

$$\text{Slope of AF} = \frac{3-2}{-3+2} = \frac{1}{-1} = -1$$

$$\text{Slope of BF} = \frac{10-3}{4+3} = \frac{7}{7} = 1$$

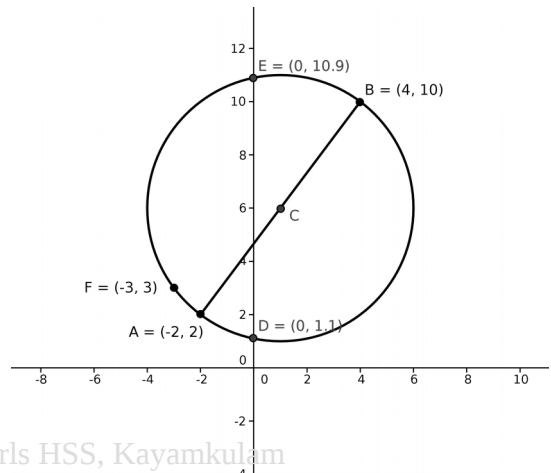
∴ slope of AF x Slope of BF = -1 x 1 = -1
 (-3,3) is a point on the circle.

b) Equation of the circle is

$$(x-1)^2 + (y-6)^2 = 25$$

$$x^2 + y^2 - 2x - 12y + 1 + 36 = 25$$

$$\therefore x^2 + y^2 - 2x - 12y + 12 = 0$$



c) If Circle touches the y axis, x=0 ∴

$$y^2 - 12y + 12 = 0 \quad \therefore (y-6)^2 = 24$$

$$y - 6 = \pm\sqrt{24} = \pm 2\sqrt{6} \quad \therefore y = 6 \pm 2\sqrt{6}$$

$$\therefore \text{Points are } (0, 6+2\sqrt{6}), (0, 6-2\sqrt{6})$$

OR

Equation of the circle = $(x-2)^2 + (y-3)^2 = 25$

a) (2,3) b) 5 c) If (5,7) is a point on the circle, this satisfies the equation of the circle. $(5-2)^2 + (7-3)^2 = 3^2 + 4^2 = 9 + 16 = 25$ c) If it touches the x-axis, y=0

∴ $(x-2)^2 + (0-3)^2 = 25 \therefore (x-2)^2 + 9 = 25 \therefore (x-2)^2 = 16 \therefore x-2 = \pm 4 \therefore x = 2+4 = 6$ or $x = 2-4 = -2$
 The points are (6,0) and (-2,0)