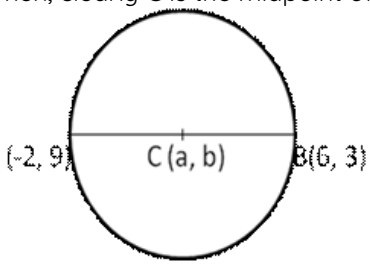
Exercise 16B

Question 11:
Let A(-2, 9) and B(6, 3) be the two points of the given diameter AB and let C(a, b) be the center of the circle.
Then, clearly C is the midpoint of AB



By the midpoint formula of the co-ordinates,

$$\text{Co-ordinates of C are } \left(\frac{-2+6}{2}, \frac{9+3}{2}\right)$$

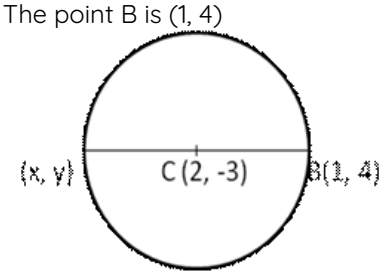
$$\text{But the co-ordinates of C are } (a, b)$$

$$\therefore \frac{-2+6}{2} = a \text{ and } \frac{9+3}{2} = b$$

$$a = 2 \text{ and } b = 6$$

Hence, the required point C(2, 6).

Question 12:
A, B are the end points of a diameter. Let the coordinates of A be (x, y).
The point B is (1, 4)



The center C(2, -3) is the midpoint of AB.

$$\therefore \frac{x+1}{2} = 2 \Rightarrow x = 3$$

$$\frac{y+4}{2} = -3 \Rightarrow y = -10$$

The point A is (3, -10).

Question 13:
Let P divided the join of A(8, 2), B(-6, 9) in the ratio k : 1
By section formula, the coordinates of p are

$$\left(\frac{-6k+8}{k+1}, \frac{9k+2}{k+1}\right)$$

$$\therefore \frac{-6k+8}{k+1} = 2 \text{ and } \frac{9k+2}{k+1} = 5$$

$$\Rightarrow -6k+8 = 2k+2 \text{ and } 9k+2 = 5k+5$$

$$-8k = -6 \text{ and } 4k = 3$$

$$k = \frac{-6}{-8} = \frac{3}{4} \text{ and } k = \frac{3}{4}$$

$$\Rightarrow k = \frac{3}{4} \text{ in each case}$$

Hence, the required ratio of (3/4 : 1) which is (3 : 4)

********** END **********