



### Exercise 16D

Question 1:

Distance between the points  $\left(-\frac{8}{5}, 2\right)$  and  $\left(\frac{2}{5}, 2\right)$

$$\begin{aligned} &= \sqrt{\left(-\frac{8}{5} - \frac{2}{5}\right)^2 + (2 - 2)^2} \\ &= \sqrt{\left(-\frac{10}{5}\right)^2 + 0} \\ &= \sqrt{(-2)^2 + 0} \\ &= 2 \text{ units} \end{aligned}$$

Question 2:

The points  $(3, a)$  lies on the line  $2x - 3y = 5$ .

Substituting the values of  $x$  and  $y$  in the given equation:

$$2 \times 3 - 3 \times a = 5 \text{ or } 6 - 3a = 5$$

$$\Rightarrow 3a = 1$$

$$\Rightarrow a = 1/3$$

Question 3:

The points  $A(4,3)$  and  $B(x, 5)$  lie on the circle with center  $O(2,3)$

$OA$  and  $OB$  are radius of the circle.

$$\Rightarrow OA = OB \text{ or } OA^2 = OB^2$$

$$\therefore (2 - 4)^2 + (3 - 3)^2 = (2 - x)^2 + (3 - 5)^2$$

$$\text{or } 4 + 0 = 4 + x^2 - 4x + 4$$

$$\Rightarrow x^2 - 4x + 4 = 0$$

$$\text{or } (x - 2)^2 = 0 \therefore x = 2$$

Question 4:

The point  $P(x, y)$  is equidistant from the point  $A(7, 1)$  and  $B(3, 5)$

$$\Rightarrow PA = PB \text{ or } PA^2 = PB^2$$

$$\therefore (x-7)^2 + (y-1)^2 = (x-3)^2 + (y-5)^2$$

$$\text{or } x^2 + y^2 - 14x - 2y + 49 + 1 = x^2 + y^2 - 6x - 10y + 9 + 25$$

$$\Rightarrow -14x - 2y + 50 = -6x - 10y + 34$$

$$(-14 + 6)x + (-2 + 10)y + 50 - 34 = 0$$

$$-8x + 8y + 16 = 0$$

$$\text{Hence, } x - y = 2$$

\*\*\*\*\* END \*\*\*\*\*