Exercise 16D

Question 1:

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

$$= \sqrt{\left(-\frac{8}{5}-\frac{2}{5}\right)^2+(2-2)^2}$$

$$= \sqrt{\left(-\frac{10}{5}\right)^2+0}$$

$$= \sqrt{(-2)^2+0}$$

$$= 2\,\text{units}$$

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 × 3 - 3 × a = 5 or 6 - 3a = 5
⇒ 3a = 1
⇒ 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)

$\Rightarrow PA = PB$ or $PA^2 = PB^2$

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

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

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

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

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

Hence, $x - y = 2$

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