

SAMPLE PAPER 2: PAPER 2

QUESTION 1 (25 MARKS)

Question 1 (a)

$$l: x + 3y = 0 \Rightarrow m_1 = -\frac{1}{3}$$

$$k: ax + y = 0 \Rightarrow m_2 = -a$$

$$m_1 \times m_2 = -1 \Rightarrow \left(-\frac{1}{3}\right)(-a) = -1$$

Perpendicular lines: $m_1 \times m_2 = -1$

$$\frac{1}{3}a = -1$$

$$\therefore a = -3$$

Question 1 (b)

$$(0, 0) \in l: x + 3y = 0?$$

$$(0) + 3(0) = 0$$

$$(0, 0) \in k: -3x + y = 0?$$

$$-3(0) + (0) = 0$$

Question 1 (c)

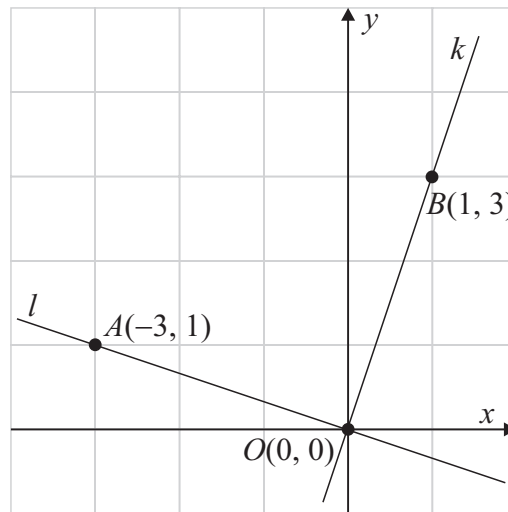
$$A(-3, 1) \in l: x + 3y = 0?$$

$$(-3) + 3(1) = -3 + 3 = 0$$

$$B(1, 3) \in k: -3x + y = 0?$$

$$-3(1) + (3) = -3 + 3 = 0$$

Question 1 (d)



Question 1 (e)

Find D by a translation:

$$O(0, 0) \rightarrow B(1, 3)$$

$$A(-3, 1) \rightarrow D(-2, 4)$$

$$|PQ| = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$O(0, 0), B(1, 3)$$

$$|OB| = \sqrt{(3-0)^2 + (1-0)^2} = \sqrt{9+1} = \sqrt{10}$$

$$\text{Area of } AOBD = \sqrt{10} \times \sqrt{10} = 10$$

