



CHAPTER 6: COORDINATE GEOMETRY



Paper 1

Solution to Question 8

- (a) Let the coordinates of point C be (x, y) .

$$\text{Area of } \triangle ABC = 21 \text{ unit}^2$$

$$\frac{1}{2} \begin{vmatrix} -1 & -3 & x & -1 \\ 4 & -5 & y & 4 \end{vmatrix} = 21$$

$$\frac{1}{2} |(5 - 3y + 4x) - (-12 - 5x - y)| = 21$$

$$\frac{1}{2} |5 - 3y + 4x + 12 + 5x + y| = 21$$

$$\frac{1}{2} |9x - 2y + 17| = 21$$

$$|9x - 2y + 17| = 42$$

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$$9x - 2y = 25 \quad \dots\dots (1)$$

$$y = x - 2 \quad \dots\dots (2)$$

Substitute (2) into (1).

$$9x - 2(x - 2) = 25$$

$$7x = 21$$

$$x = 3$$

From (2): $y = 3 - 2 = 1$

Thus, the coordinates of point C are $(3, 1)$.

- (b) Equation of CB : $y = x - 2$

Since point D lies on the x -axis, $y = 0$. Hence, the coordinates of D are $(2, 0)$.

$$\left(\frac{n(3) + m(-3)}{m + n}, \frac{n(1) + m(-5)}{m + n} \right) = (2, 0)$$

$$\frac{n(3) + m(-3)}{m + n} = 2$$

$$3n - 3m = 2m + 2n$$

$$n = 5m$$

$$\frac{m}{n} = \frac{1}{5}$$

Thus, $m : n = 1 : 5$