Coordinate Geometry

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Class 10^{th} Maths - Chapter 7

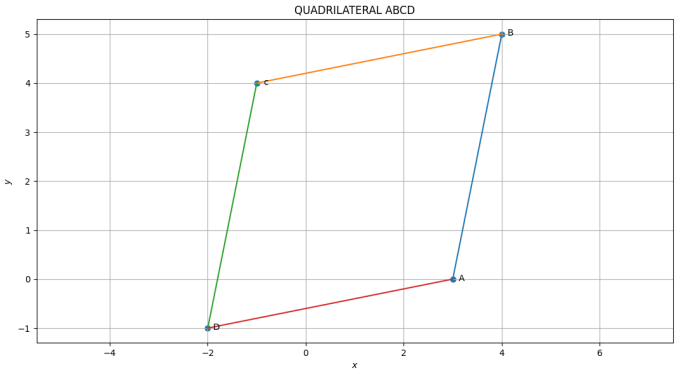
This is Problem-10 from Exercise 7.2

1. Find the area of the rhombus whose vertices are: (3,0),(4,5),(-1,4),(-2,-1)

$$(3,0),(4,5),(-1,4),(-2,-1) \tag{0.0.1}$$

Solution:

Construction



Given Data:

$$A = \begin{pmatrix} 3 \\ 0 \end{pmatrix} \tag{0.0.2}$$

$$B = \begin{pmatrix} -4 \\ 5 \end{pmatrix} \tag{0.0.3}$$

$$C = \begin{pmatrix} -1 \\ -4 \end{pmatrix} \tag{0.0.4}$$

$$D = \begin{pmatrix} -2 \\ -1 \end{pmatrix} \tag{0.0.5}$$

(0.0.6)

$$\mathbf{AC} = \begin{pmatrix} 4 \\ 0 \end{pmatrix} \tag{0.0.7}$$

$$\mathbf{BD} = \begin{pmatrix} 6 \\ 6 \end{pmatrix} \tag{0.0.8}$$

(0.0.9)

AREA OF A RHOMBUS;

$$\frac{1}{2} \left\| \mathbf{A} - \mathbf{C} \times \mathbf{B} - \mathbf{D} \right\| \tag{0.0.10}$$

$$\frac{1}{2} \begin{vmatrix} -4 & 0 \\ -6 & -6 \end{vmatrix} \tag{0.0.11}$$

$$\frac{1}{2} \left\| 24 + 0 \right\| \tag{0.0.12}$$

$$\frac{1}{2} \left\| 24 \right\| \tag{0.0.13}$$

$$\frac{12}{1} sq.units \tag{0.0.14}$$

$$12 sq.units \tag{0.0.15}$$

$$there fore the area of the given rhombus is 12 sq.units \tag{0.0.16}$$