Coordinate Geometry

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1 Class 10^{th} Maths - Chapter 7

This is Problem-4 from Exercise 7.3

1. QUESTION: Find the area of the quadrilateral whose taken in order are A(-4,-2), B(-3,-5), C(3,-2) and D(2,3).

Solution:
We have two triangles ABC and ADC.
Then,
Area of triangle ABC

$$= \frac{1}{2} \|\mathbf{BA} \times \mathbf{BC}\| \tag{1}$$

$$= \frac{1}{2} \begin{vmatrix} -1 & 6 \\ 3 & 3 \end{vmatrix} \tag{2}$$

$$= \frac{1}{2} \|-3 - 18\| \tag{3}$$

$$= \frac{1}{2}(21) \tag{4}$$

$$= \frac{21}{2} sq.units \tag{5}$$

Now, area of triangle ADC

$$= \frac{1}{2} \|\mathbf{DA} \times \mathbf{DC}\| \tag{6}$$

$$= \frac{1}{2} \begin{vmatrix} -6 & 1 \\ -5 & -5 \end{vmatrix} \tag{7}$$

$$= \frac{1}{2} \|30 + 5\| \tag{8}$$

$$= \frac{1}{2}(35) \tag{9}$$

$$= \frac{35}{2} sq.units \tag{10}$$

Now, Area of ABCD = Area of ABC + Area of ADC

$$= \frac{21}{1} + \frac{35}{2} \tag{11}$$

$$= 28 sq.units \tag{12}$$

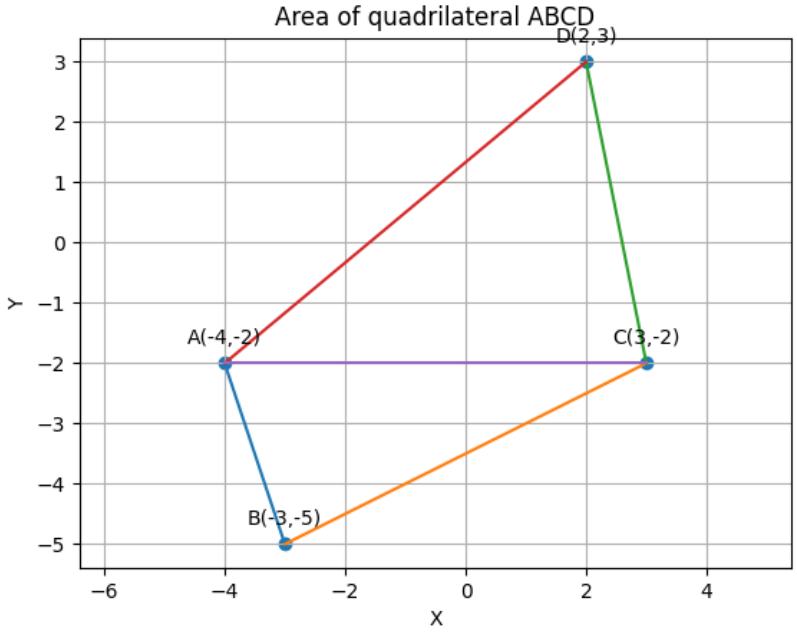

Figure 1: Quadrilateral ABCD