Coordinate Geometry

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Class 10^{th} Maths - Chapter 7

This is Problem-5 from Exercise 7.3

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,

$$\tag{1}$$

$$Area of triangle ABC = \frac{1}{2}\left|\left(AB \times BC\right)\right| \tag{2}$$

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

$$= \frac{1}{2}\left((3) + (18)\right) \tag{4}$$

$$= \frac{1}{2}(21) \tag{5}$$

$$= 21/2 squnits \tag{6}$$

$$\tag{7}$$

$$Now, area of triangle ADC \tag{8}$$

$$(9)$$

$$Areaoftriangle ACD = \frac{1}{2}\left|\left(AD \times DC\right)\right| \quad (10)$$

$$= \frac{1}{2}\begin{vmatrix} -6 & -1 \\ 5 & -5 \end{vmatrix} \quad (11)$$

$$= \frac{1}{2}\left((30) + (5)\right) \quad (12)$$

$$= \frac{1}{2}(35) \quad (13)$$

$$= 35/2 square units \quad (14)$$

$$NOW, AREA of quadrilateral = area of ABC + area of ADC \quad (15)$$

$$AREA = 21/2 + 35/2 \quad (16)$$

$$(17)$$

$$AREA = 28 sq.units \quad (18)$$