Coordinate Geometry

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1 Class 10th Maths - Chapter 7

This is Problem-4 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

$$\tag{1}$$

$$We have two triangles ABC and ADC. Then, \tag{2}$$

$$First consider triangle ABC \tag{3}$$

$$Area of triangle ABC = \frac{1}{2}\left|\left(AB \times BC\right)\right| \tag{4}$$

$$= \frac{1}{2}\begin{vmatrix} -1 & -6 \\ 3 & -3 \end{vmatrix} \tag{5}$$

$$= \frac{1}{2}\left((3)+(18)\right) \tag{6}$$

$$= \frac{1}{2}(21) \tag{7}$$

$$= 21/2 sq units \tag{8}$$

$$\tag{9}$$

$$Now, area of triangle ADC \tag{10}$$

$$Area of triangle ACD = \frac{1}{2}\left|\left(AD \times DC\right)\right| \tag{11}$$

$$= \frac{1}{2}\begin{vmatrix} -6 & -1 \\ 5 & -5 \end{vmatrix} \tag{12}$$

$$= \frac{1}{2}\left((30) + (5)\right) \tag{13}$$

$$= \frac{1}{2}(35) \tag{14}$$

$$= 35/2 \, square units \tag{15}$$

$$\tag{16}$$

$$NOW, AREA of quadrilateral = area of ABC + area of ADC \tag{17}$$

$$AREA = 21/2 + 35/2 \tag{18}$$

$$\tag{19}$$

$$AREA = 28 sq.units \tag{20}$$

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