Coordinate Geometry

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Class 10^{th} Maths - Chapter 7

This is Problem-1.1 from Exercise 7.3

1. Find the area of the triangle whose vertices are:

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

Solution:
Given Data:

$$x_1 = 2, y_1 = 3 \tag{2}$$
$$x_2 = -1, y_2 = 0 \tag{3}$$
$$x_3 = 2, y_3 = -4 \tag{4}$$
$$\tag{5}$$

By using the formula:

$$\frac{1}{2}[x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)] \tag{6}$$
$$\frac{1}{2}[2(0 - (-4)) + (-1(-4 - 3) + 2(3 - 0)] \tag{7}$$
$$\frac{1}{2}[2(4) + (-1(-7) + 2(3)] \tag{8}$$
$$\frac{1}{2}[8 + 7 + 6] \tag{9}$$
$$\frac{1}{2}[21] \tag{10}$$
$$\frac{21}{2} sq.units \tag{11}$$

Area of the triangle = 10.5 sq.units