Ch - 7 Coordinate geometry

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1 August 2023

Class10th Maths- chapter 7

This is problem 3 of exercise 7.3

1. Find the area of a triangle formed by joining the mid points of the sides of the triangle whose vertices are (0,-1) , (2,1) and (0,3). Find the ratio of this area to the area of the given triangle.

   Solution:
   Let the points be A(0,-1) , B(2,1) , C (0,3)
   Hence the points are :
   D = (1,0)
   E = (1,2)
   F = (0,1)
   Area of triangle =

$$[\frac{1}{2}]|x_1(y_2-y_3)+x_2(y_3-y_1)+x_3(y_1-y_2)| \tag{1}$$

   From this formula, area of triangle ABC=

$$[\frac{1}{2}]|0(1-3)+2(3+1)+0(-1-1)| \tag{2}$$

$$\tag{3}$$

$$=4sq.units \tag{4}$$

   Likewise, the area of the triangle DEF=

$$[\frac{1}{2}]|1(2-1)+1(1-0)+0(0-2)| \tag{5}$$

$$\tag{6}$$

$$=1sq.unit \tag{7}$$

   Therefore, the ratio between the triangle DEF and ABC = 1:4