Coordinate Geometry

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Class 10^{th} Maths - Chapter 7

This is Problem-7 from Exercise 7.4

1. Let A(4, 2), B(6,5) and C(1, 4) be the vertices of triangle ABC
   (ii)Find the coordinates of the point P on the AD, such that
   AP: PD = 2: 1.
   Solution: Median AD of the triangle will divide the side BC in two equal parts. So D is the midpoint of side BC

$$\mathbf{D} = \frac{(m)\mathbf{B} + (n)\mathbf{C}}{m+n} \tag{1}$$

$$\mathbf{D} = \frac{1\begin{pmatrix}6\\5\end{pmatrix} + 1\begin{pmatrix}1\\4\end{pmatrix}}{2}\mathbf{D} = \begin{pmatrix}\frac{7}{2}\\\frac{9}{2}\end{pmatrix} \tag{2}$$

   Point P divides the side AD in a ratio 2:1

$$\mathbf{P} = \frac{(m)\mathbf{D} + (n)\mathbf{A}}{m+n}\mathbf{P} = \frac{(2)\begin{pmatrix}\frac{7}{2}\\\frac{9}{2}\end{pmatrix} + (1)\begin{pmatrix}4\\2\end{pmatrix}}{3}\mathbf{P} = \begin{pmatrix}\frac{11}{3}\\\frac{11}{3}\end{pmatrix} \tag{3}$$

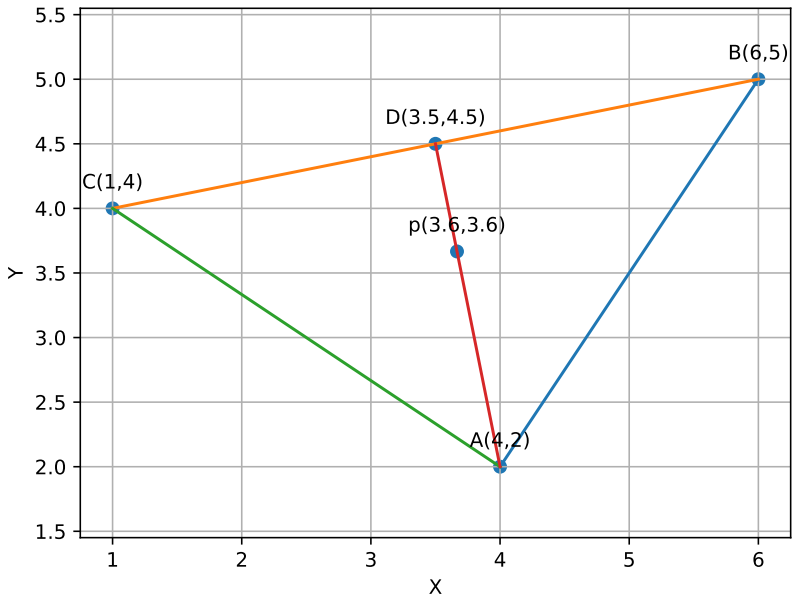

Figure 1: Triangle ABC