

ASSIGNMENT-2

AI24BTECH11012-Pushkar Gudla

VECTOR ARITHMETIC(CBSE)

- 1) If $(3, 3)$, $(6, y)$, $(x, 7)$ and $(5, 6)$ are the vertices of a parallelogram taken in order, find the values of x and y . (10, 2011)

Solution: We can find the values of x and y by finding the midpoint of the points that are on opposite ends of the diagonals. Let O be the midpoint of the diagonals.

$$O = \frac{\begin{pmatrix} 3 \\ 3 \end{pmatrix} + \begin{pmatrix} x \\ 7 \end{pmatrix}}{2}$$

from here we get $O = \begin{pmatrix} (3+x)/2 \\ 5 \end{pmatrix}$, we also have

$$O = \frac{\begin{pmatrix} 6 \\ y \end{pmatrix} + \begin{pmatrix} 5 \\ 6 \end{pmatrix}}{2}$$

this gives us $O = \begin{pmatrix} 5.5 \\ (y+6)/2 \end{pmatrix}$

On comparing the above two values of O , we get the values of x and y as:

$x = 8, y = 4$

