ASSIGNMENT-2

AI24BTECH11012-Pushkar Gudla

Vector Arithmetic(CBSE)

Question: 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: Property: midpoints of diagnol coincide. Let **O** be the midpoint of the diagnols.

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

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

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

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

On comparing the above two values of **O**, we get the values of x and y as:
$x = 8, y = 4$