1-1.2-11

EE24BTECH11027-satwikagv

Question:
If the points $\mathbf{A}\,(6,1)\,,\mathbf{B}\,(8,2)\,,\mathbf{C}\,(9,4)\,,\mathbf{D}\,(p,3)$ are the vertices of a parellelogram, taken in order, find the value of p.
Solution:
Given the points are the vertices of a parllelogram.
If $ABCD$ is a parellelogram with $AB \| CD$,

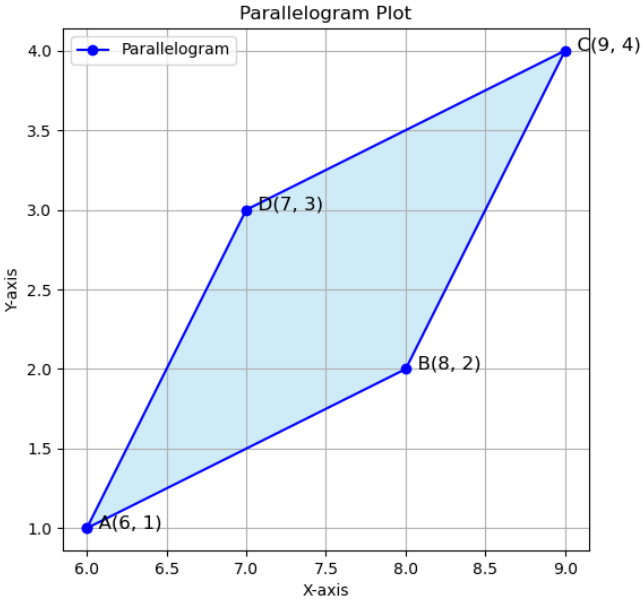
$$\textbf{B-A=C-D} \tag{0.1}$$

$$\begin{pmatrix}8\\2\end{pmatrix} - \begin{pmatrix}6\\1\end{pmatrix} = \begin{pmatrix}9\\4\end{pmatrix} - \begin{pmatrix}p\\3\end{pmatrix}$$

$$\begin{pmatrix}2\\1\end{pmatrix} = \begin{pmatrix}9-p\\1\end{pmatrix}$$

$$9 - p = 2$$

$$p = 7$$


Parallelogram Plot
Parallelogram
C(9, 4)
D(7, 3)
B(8, 2)
A(6, 1)
Y-axis
X-axis
4.0
3.5
3.0
2.5
2.0
1.5
1.0
6.0
6.5
7.0
7.5
8.0
8.5
9.0