1.1.2.13

AI24BTECH11020 - RISHIKA KOTHA

Question

The fourth vertex **D** of a parallelogram ABCD whose three vertices are $\mathbf{A}(-2,3), \mathbf{B}(6,7)$ and $\mathbf{C}(8,3)$ is

Solution

Given,

$$\mathbf{A} = \begin{pmatrix} -2 \\ 3 \end{pmatrix} \tag{0.1}$$

$$\mathbf{B} = \begin{pmatrix} 6 \\ 7 \end{pmatrix} \tag{0.2}$$

$$\mathbf{C} = \begin{pmatrix} 8 \\ 3 \end{pmatrix} \tag{0.3}$$

$$\tag{0.4}$$

To find the vertex D of a parallelogram,

$$\mathbf{D} = \mathbf{A} + \mathbf{C} - \mathbf{B} \tag{0.5}$$

$$\mathbf{D} = \begin{pmatrix} -2 + 8 - 6 \\ 3 + 3 - 6 \end{pmatrix} \tag{0.6}$$

$$\mathbf{D} = \begin{pmatrix} 0 \\ -1 \end{pmatrix} \tag{0.7}$$

$$\tag{0.8}$$

therefore,the coordinates of the fourth vertex **D** are $\begin{pmatrix} 0 \\ -1 \end{pmatrix}$