

ASSIGNMENT-1 PROBABILITY

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Question 1.27

Verify that $\mathbf{A} - \mathbf{F} = \mathbf{E} - \mathbf{D}$

The quadrilateral AFDE is defined to be a parallelogram.

Solution: : D,E,F are midpoints of BC,CA,AB respectively

$$\mathbf{D} = \frac{1}{2} \begin{pmatrix} -4 - 3 \\ 6 - 5 \end{pmatrix} \quad (1)$$

$$= \frac{1}{2} \begin{pmatrix} -7 \\ 1 \end{pmatrix} \quad (2)$$

$$\mathbf{E} = \frac{1}{2} \begin{pmatrix} 1 - 3 \\ -1 - 5 \end{pmatrix} \quad (3)$$

$$= \frac{1}{2} \begin{pmatrix} -2 \\ -6 \end{pmatrix} \quad (4)$$

$$\mathbf{F} = \frac{1}{2} \begin{pmatrix} 1 - 4 \\ -1 + 6 \end{pmatrix} \quad (5)$$

$$= \frac{1}{2} \begin{pmatrix} -3 \\ 5 \end{pmatrix} \quad (6)$$

$$\mathbf{A} - \mathbf{F} = \frac{1}{2} \begin{pmatrix} 2 + 3 \\ -2 - 5 \end{pmatrix} \quad (7)$$

$$= \frac{1}{2} \begin{pmatrix} 5 \\ -7 \end{pmatrix} \quad (8)$$

$$\mathbf{E} - \mathbf{D} = \frac{1}{2} \begin{pmatrix} -2 + 7 \\ -6 - 1 \end{pmatrix} \quad (9)$$

$$= \frac{1}{2} \begin{pmatrix} 5 \\ -7 \end{pmatrix} \quad (10)$$

$$\therefore \mathbf{A} - \mathbf{F} = \mathbf{E} - \mathbf{D} \quad (11)$$

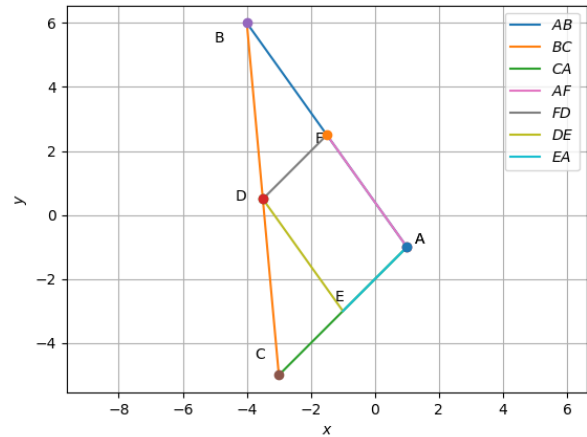


Fig. 0. The quadrilateral AFDE is defined to be a parallelogram.