# ASSIGNEMNT-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

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

$$= \frac{1}{2}\begin{pmatrix} -7 \\ 1 \end{pmatrix} \tag{2}$$

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

$$= \frac{1}{3}\begin{pmatrix} -2 \\ 6 \end{pmatrix} \tag{4}$$

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

$$= \frac{1}{3}\begin{pmatrix} -3 \\ 5 \end{pmatrix} \tag{6}$$

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

$$= \frac{1}{2}\begin{pmatrix} 5 \\ -7 \end{pmatrix} \tag{8}$$

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

$$= \frac{1}{2}\begin{pmatrix} 5 \\ -7 \end{pmatrix} \tag{10}$$

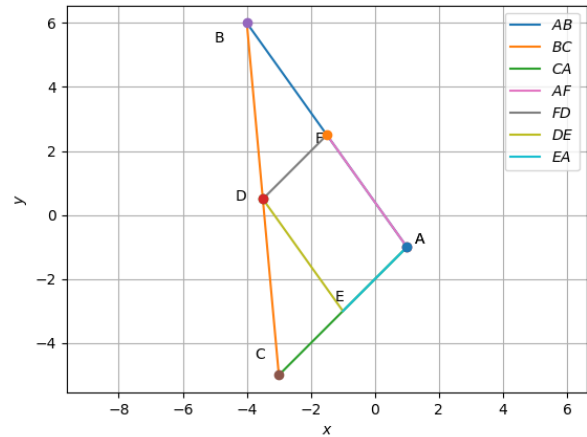$$\therefore \mathbf{A} - \mathbf{F} = \mathbf{E} - \mathbf{D} \tag{11}$$



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