Chapter Name

Kishan(pusarlakishan@sriprakashschools.com)

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10th Maths - Chapter 7

This is Problem-6.1 from Exercise 7.1

1. Name the type of quadrilateral formed, if any, by the following points, and give reasons for your answer:

   (i) $(-1, -2), (1, 0), (-1, 2), (-3, 0)$

   Solution: :

   if $(\mathbf{A} - \mathbf{B})^\top (\mathbf{D} - \mathbf{C}) = 0$ then it is a parallelogram

   $\begin{pmatrix} -2 & 2 \end{pmatrix} \begin{pmatrix} -2 \\ 2 \end{pmatrix}$

   -2(2)+2(2)

   -4+4

   0=0

   so, it is a parallelogram

   if $(\mathbf{A} - \mathbf{C})^\top (\mathbf{B} - \mathbf{D}) = 0$ then it is a rhombus

   $\begin{pmatrix} 0 & 0 \end{pmatrix} \begin{pmatrix} 4 \\ 0 \end{pmatrix}$

   0(4)-0(0)

   0-0

   $0 = 0$

   so, it is a rhombus

if $(\mathbf{A} - \mathbf{D})^\top (\mathbf{A} - \mathbf{B}) = 0$ then it is a square

$$\begin{pmatrix} 2 & 2 \end{pmatrix}^\top \begin{pmatrix} -2 \\ 2 \end{pmatrix}$$

2(-2)+2(2)

-4+4

0= 0

so, it is a square

if $(\mathbf{A} - \mathbf{B})^\top (\mathbf{B} - \mathbf{C}) = 0$ then it is a rectangle

$$\begin{pmatrix} -2 & 2 \end{pmatrix}^\top \begin{pmatrix} 2 \\ -2 \end{pmatrix}$$

-2(2)+2(-2)

-4+4

0=0

so, it is a rectangle
It is a square because every square is rectangle,rhombus and parallelogram