Coordinate Geometry

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Class 10^{th} Maths - Chapter 7

This is Problem-6.3 from Exercise 7.1

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

   (4,5), (7,6), (4,3),(1,2)

   Solution:

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

   $\begin{pmatrix}-3 & -1\end{pmatrix}\begin{pmatrix}-3\\-1\end{pmatrix}$

   -3(-3)+-1(-1)

   9+1

   10≠=0

   so, it is not a parallelogram

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

   $\begin{pmatrix}0 & 2\end{pmatrix}\begin{pmatrix}6\\4\end{pmatrix}$

   0(6)+2(4)

   0+8

$8 \neq 0$

so it is not a rhombus

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

$$\begin{pmatrix}3 & 3\end{pmatrix}\begin{pmatrix}-3\\-1\end{pmatrix}$$

3(-3)-3(-1)

-9+3

$-6 \neq 0$

so, it is not a square

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

$$\begin{pmatrix}-3 & -1\end{pmatrix}^{\top}\begin{pmatrix}3\\3\end{pmatrix}$$

-3(3)-1(3)

-9-3

$-12 \neq 0$

so, it is not a rectangle