Coordinate Geometry

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Class 10^{th} Maths - Chapter 7

This is Problem-6.2 from Exercise 7.1

1. Name the type of quadrilateral formed, if any, by the following points, and give reasons for your answer
(-3,5), (3,1), (0,3),(-1,-4)
Solution:
if $(\mathbf{A}-\mathbf{B})^{\top}(\mathbf{D}-\mathbf{C})=0$ then it is a parallelogram
$\begin{pmatrix}-6 & 4\end{pmatrix}\begin{pmatrix}-1\\-7\end{pmatrix}$
-6(-1)+4(-7)
6-28
-22≠=0
so, it is not a parallelogram
if $(\mathbf{A}-\mathbf{C})^{\top}(\mathbf{B}-\mathbf{D})=0$ then it is a rhombus
$\begin{pmatrix}3 & -2\end{pmatrix}\begin{pmatrix}4\\5\end{pmatrix}$
3(4)-2(5)
12-10
$2 \neq 0$
so it is not a rhombus
if $(\mathbf{A}-\mathbf{D})^{\top}(\mathbf{A}-\mathbf{B})=0$ then it is a square
$\begin{pmatrix}-2 & 9\end{pmatrix}\begin{pmatrix}-6\\4\end{pmatrix}$
-2(-6)+9(4)
12+36
$48 \neq 0$
so, it is not a square
if $(\mathbf{A}-\mathbf{B})^{\top}(\mathbf{B}-\mathbf{C})=0$ then it is a rectangle
$\begin{pmatrix}-6 & 4\end{pmatrix}^{\top}\begin{pmatrix}3\\-2\end{pmatrix}$
-6(3)+4(-2)
-18-8
-26≠0

so, it is not a rectangle

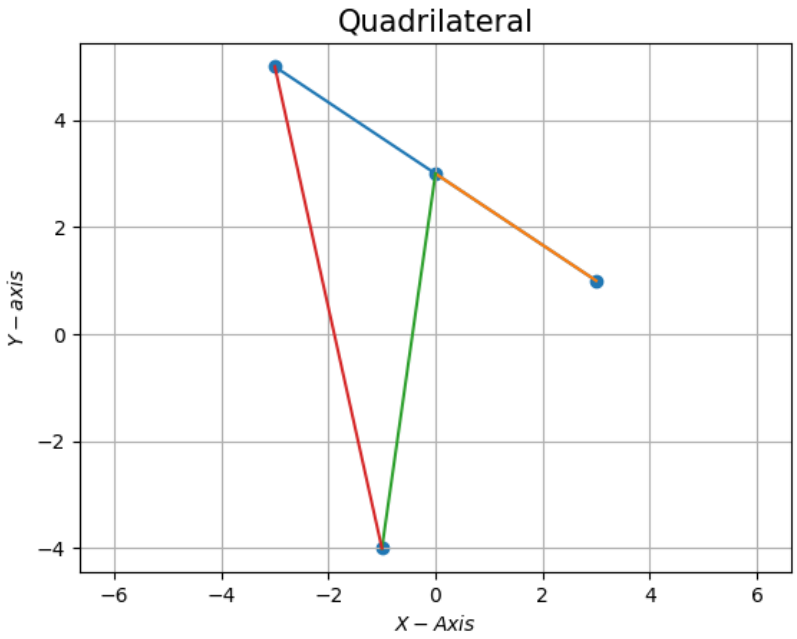

Figure 1: The points ABCD do not form a quadrilateral