

# Assignment 1

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## 1 PROBLEM 1

Show that the points  $A = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$ ,  $B = \begin{pmatrix} 5 \\ 4 \end{pmatrix}$ ,  $C = \begin{pmatrix} 3 \\ 8 \end{pmatrix}$ ,  $D = \begin{pmatrix} -1 \\ -6 \end{pmatrix}$  are the vertices of a square

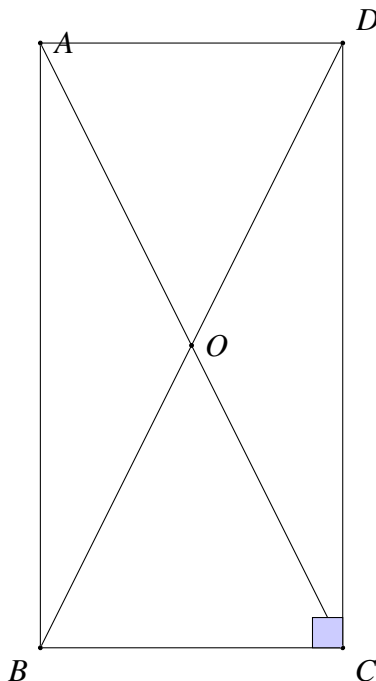
## 2 SOLUTION

The calculated value of AB, BC, CD and DA is equal to  $2\sqrt{5}$  i.e.  $AB=BC=CD=DA$ . Also when we calculate the distance between two diagonals AC and BD, it comes  $2\sqrt{5}$  i.e.  $AC=BD$ .

So, here we can see distance between all sides and diagonals are equal.

A, B, C and D are the vertices of a square.

□



Answer Image

## 3 PROBLEM 2

Find the coordinates of the point equidistant from three given points  $A = \begin{pmatrix} 5 \\ 1 \end{pmatrix}$ ,  $B = \begin{pmatrix} -3 \\ -7 \end{pmatrix}$ ,  $C = \begin{pmatrix} 7 \\ -1 \end{pmatrix}$

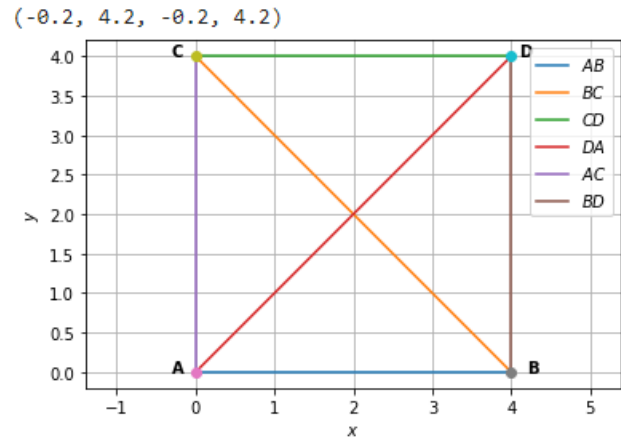


Fig. 0: Answer Image for Q1

## 4 SOLUTION

Applying the distance formula,

if points are equidistant then the length is same

$P(p, q) \equiv (x_1, y_1)$  and  $A(5, 1) \equiv (x_2, y_2)$

$1 \equiv \text{coordinate } P, 2 \equiv \text{coordinate } Q$

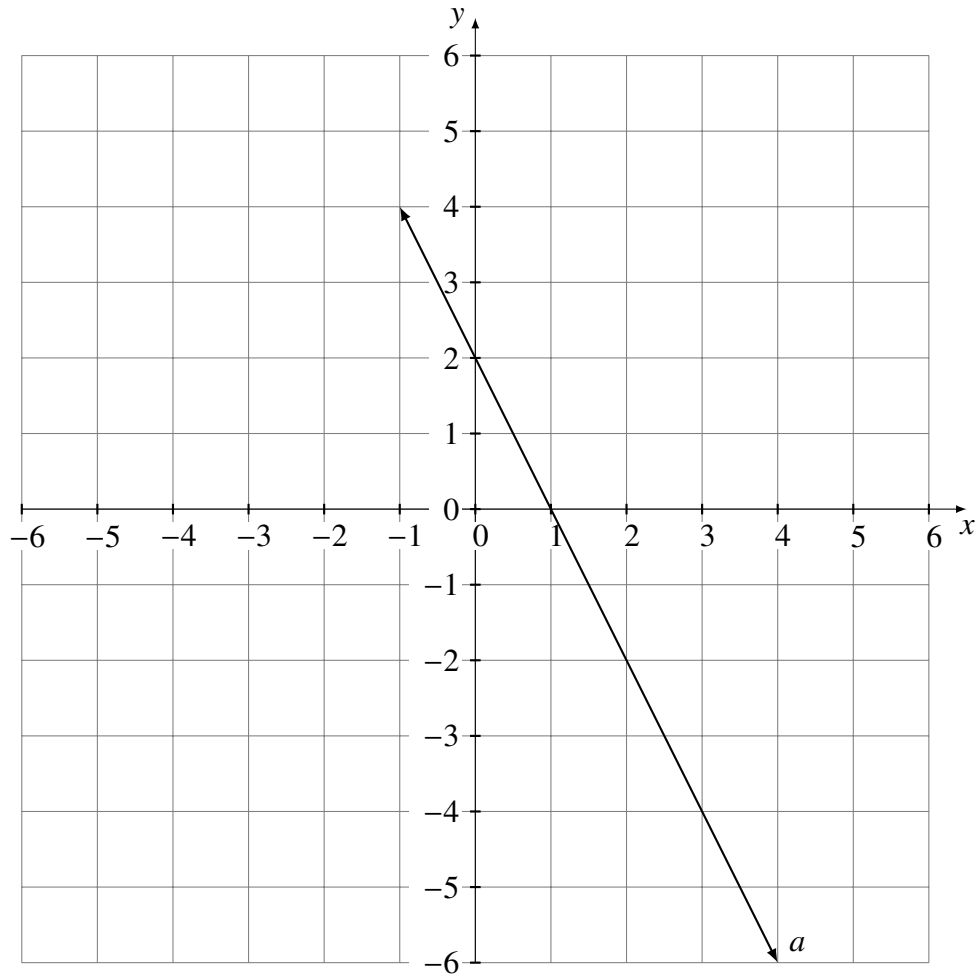
4.0.0P (P,Q) = (1,2)

The coordinates were found at points (1,2), The same were plotted on the graph for the representation.

The same is represented as follows-

X- coordinate value 1 Y- coordinate value 2

## Graphical Output



Thank you!!!