SM 5083
Assignment Number 01

August 26, 2021

Roll Number
SM21MTECH12014

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1. Q1) Show that (2,4), (3,0), (5,3), (4,7) are the vertices of a Parallelogram?

Ans: A1.

We know that, a quadrilateral is a parallelogram if opposite sides are equal and diagonal are unequal.

Let A, B, C and D denotes the vertices (2, 4), (3,0), (5,3) and (4, 7) respectively.

Using Distance Formula:

$$d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

The length of the opposite side are :

$$AB = \sqrt{(3-2)^2 + (0-4)^2} = \sqrt{17}$$
$$BC = \sqrt{(5-3)^2 + (3-0)^2} = \sqrt{13}$$
$$CD = \sqrt{(4-5)^2 + (7-3)^2} = \sqrt{17}$$
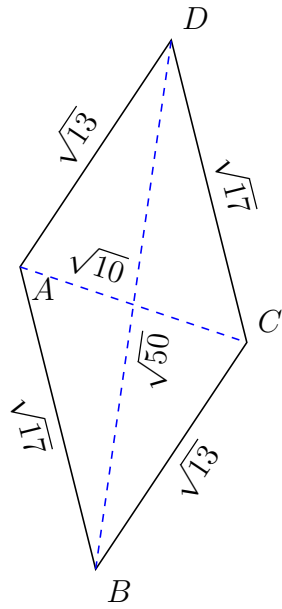$$DE = \sqrt{(4-2)^2 + (7-4)^2} = \sqrt{13}$$

as seen above The Opposite side AB = CD and BC = DE are equal

and the length of diagonal sides are

$$AC = \sqrt{(5-2)^2 + (3-4)^2} = \sqrt{10}$$
$$BD = \sqrt{(4-3)^2 + (7-0)^2} = \sqrt{50}$$

The Diagonal side AC $\neq$ BD are not equal

This proves that the A(2, 4), B(3, 0), C(5, 3) and D(4, 7) are vertices of a Parallelogram.