

Assignment 3

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1 PROBLEM 1

[https://github.com/gadepall/ncert/blob/main/linalg/construction/gvv ncert constr.pdf](https://github.com/gadepall/ncert/blob/main/linalg/construction/gvv%20ncert%20constr.pdf) Q.no.2.10

construct MORE where $MO = 6$, $OR = 4.5$, $\angle M = 60^\circ$, $\angle O = 105^\circ$ and $\angle R = 105^\circ$

2 SOLUTION

The basic property of quadrilateral is that

Lemma 2.1.

A quadrilateral should be closed shape with 4 sides

Lemma 2.2.

All the internal angles of a quadrilateral sum up to 360°

Where quadrilateral MORE has is constructed considering following parameters

$MO = 6\text{cm}$,

$OR = 4.5\text{cm}$,

$\angle M = 60^\circ$, $\angle O = 105^\circ$ $\angle R = 105^\circ$

The quadrilateral was plotted with given parameters, Co-ordinates were found to be

$$\mathbf{M} = \begin{pmatrix} 0 \\ 0 \end{pmatrix}$$

$$\mathbf{O} = \begin{pmatrix} 6 \\ 0 \end{pmatrix}$$

$$\mathbf{R} = \begin{pmatrix} 7.3 \\ 4.8 \end{pmatrix}$$

$$\mathbf{E} = \begin{pmatrix} 2.2 \\ 5.6 \end{pmatrix}$$

Based on the co-ordinates, The value of angle E was calculated

$$\angle E = 90^\circ$$

Now, The sum of all angles should be 360° if MORE is a quadrilateral, Then

$$\angle M + \angle O + \angle R + \angle E = 360^\circ$$

$$60 + 105 + 105 + 90 = 360^\circ$$

Thus, The figure plotted with given parameters fulfills the criterion, i.e the sum of angles of a quadrilateral should be 360° , Thus we can plot the quadrilateral with given parameters.

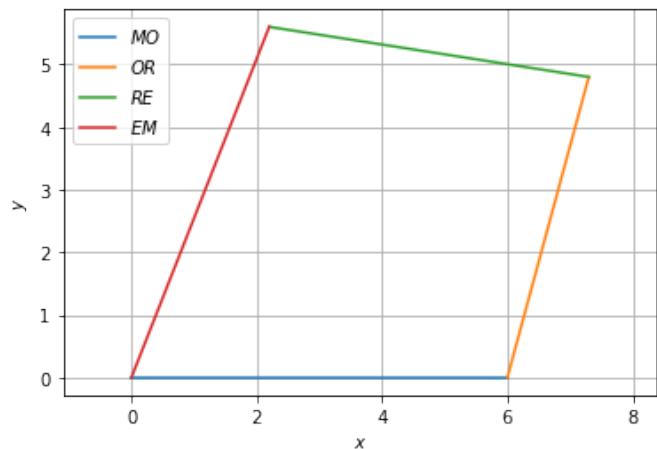


Fig. 0: Quadrilateral MORE