Assignment 2

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Download all python codes from

https://github.com/grajanarsavva/Matrix−theory/codes

and latex-tikz codes from

https://github.com/grajanarsavva/Matrix−theory

1 Question No. 2.45

Can you construct a Rhombus ABCD with AC=6 and BD=7 ?

2 Explanation

Let the vertices of the rhombus $ABCD$ be **A**,**B**,**C** and **D**.
Given AC and BD are the diagonals. AC = 6 and BD = 7
And O is the midpoint of rhombus.

$$OA = OC = \frac{1}{2} \times AC \tag{2.0.1}$$

$$OA = OC = \frac{1}{2} \times 6 = 3 \tag{2.0.2}$$

$$OD = OB = \frac{1}{2} \times BD \tag{2.0.3}$$

$$OD = OB = \frac{1}{2} \times 7 = 4.5 \tag{2.0.4}$$

We obtain the vertices of the rhombus as follows

$$\mathbf{A} = \begin{pmatrix} -3 \\ 0 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 0 \\ -3.5 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 3 \\ 0 \end{pmatrix}, \mathbf{D} = \begin{pmatrix} 0 \\ 3.5 \end{pmatrix} \tag{2.0.5}$$

Plot the Rhombus $ABCD$ is as follows:

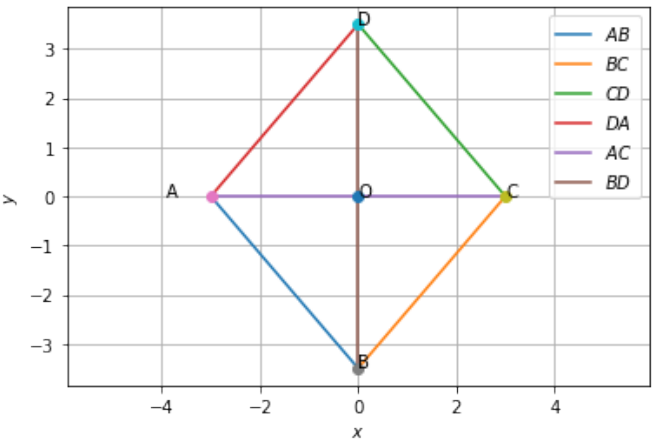

Fig. 2.1: Rhombus ABCD