

# 3-3.4-6

EE24BTECH11006 - Arnav Mahishi

Question: Construct a rhombus whose diagonals are 4cm and 6cm in lengths.

input	value
$A$	$(3, 0)$
$B$	$(0, 2)$
$C$	$(-3, 0)$
$D$	$(0, -2)$
Side length	$\sqrt{13}$

TABLE 0: Input Parameters

Solution: Assuming x and y axis as diagonals of rhombus and center as origin

$$\|\vec{OA}\| = \|\vec{OC}\| \Rightarrow \vec{OA} = \begin{pmatrix} 3 \\ 0 \end{pmatrix} \text{ and } \vec{OC} = \begin{pmatrix} -3 \\ 0 \end{pmatrix} \quad (0.1)$$

$$\|\vec{OB}\| = \|\vec{OD}\| \Rightarrow \vec{OB} = \begin{pmatrix} 0 \\ 2 \end{pmatrix} \text{ and } \vec{OD} = \begin{pmatrix} 0 \\ -2 \end{pmatrix} \quad (0.2)$$

$$\Rightarrow \text{Sidelength} = \overline{AB} = \sqrt{3^2 + 2^2} = \sqrt{13} \quad (0.3)$$

$$\Rightarrow \text{Perimeter} = 4 \cdot \overline{AB} = 4 \cdot \sqrt{13} \quad (0.4)$$

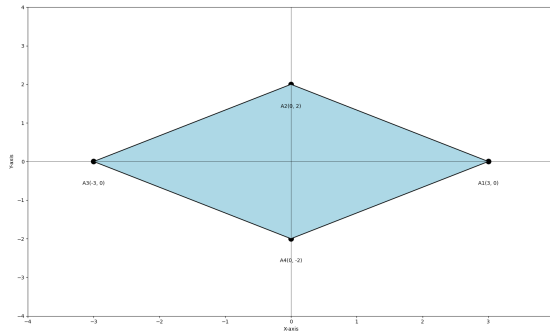


Fig. 0.1: Plot of rhombus