

Solution to 1.4.5

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Question: Draw the circle with centre at **O** and radius

$$R = OA \quad (1)$$

This is known as circumradius

Solution:

Given:

$$\mathbf{A} = \begin{pmatrix} 1 \\ -1 \end{pmatrix} \quad (2)$$

$$\mathbf{B} = \begin{pmatrix} -4 \\ 6 \end{pmatrix} \quad (3)$$

$$\mathbf{C} = \begin{pmatrix} -3 \\ -5 \end{pmatrix} \quad (4)$$

From **Q1.4.2**, the circumcentre is

$$\mathbf{O} = \frac{1}{12} \begin{pmatrix} -53 \\ 5 \end{pmatrix} \quad (5)$$

Now we will calculate the radius,

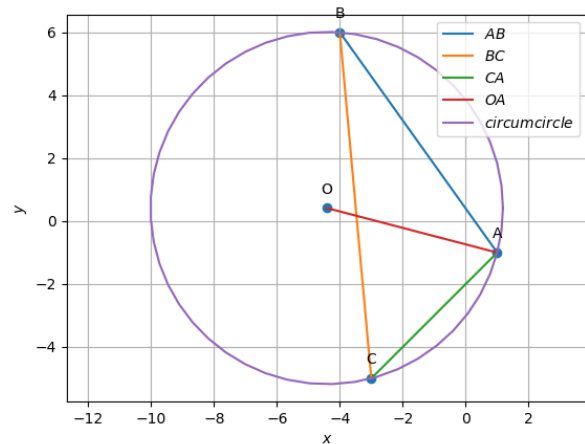
$$R = OA \quad (6)$$

$$= \|\mathbf{A} - \mathbf{O}\| \quad (7)$$

$$= \left\| \begin{pmatrix} 1 \\ -1 \end{pmatrix} - \frac{1}{12} \begin{pmatrix} -53 \\ 5 \end{pmatrix} \right\| \quad (8)$$

$$= \left\| \frac{1}{12} \begin{pmatrix} 65 \\ -17 \end{pmatrix} \right\| \quad (9)$$

$$= \frac{\sqrt{4514}}{12}$$



(10) Fig. 0. circumcircle of Triangle ABC with centre O