Assignment - Vector

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CONTENTS

I. PROBLEM

Find the distance between the point(0,0) and (36,15).Can you now find the distance between the two towns A and B discussed in Section 7.2

II. SOLUTION

The distance betwen the points A and B is given

$$\mathbf{A} = \begin{pmatrix} 0 & 0 \end{pmatrix} \tag{1}$$

$$\mathbf{B} = \begin{pmatrix} 36 & 15 \end{pmatrix} \tag{2}$$

$$\|\mathbf{A} - \mathbf{B}\| \tag{3}$$

$$\tag{4}$$

where

$$\mathbf{A} - \mathbf{B} = \begin{pmatrix} -36 \\ -15 \end{pmatrix} \tag{5}$$

$$\mathbf{d} = \sqrt{\left(\mathbf{A} - \mathbf{B}\right)^T \left(\mathbf{A} - \mathbf{B}\right)} \tag{6}$$

$$= \sqrt{\begin{pmatrix} -36 \\ -15 \end{pmatrix} \left(-36 - 15\right)} \tag{7}$$

$$= \sqrt{1296 + 225} \tag{8}$$

$$= \sqrt{1521} \tag{9}$$

$$= 39 \tag{10}$$

III. CODE LINK

https://github.com/sssurajit/fwc/blob/main/vector/vector-1/codes/vector.py

Execute the code by using the command
python3 vector.py

IV. FIGURE

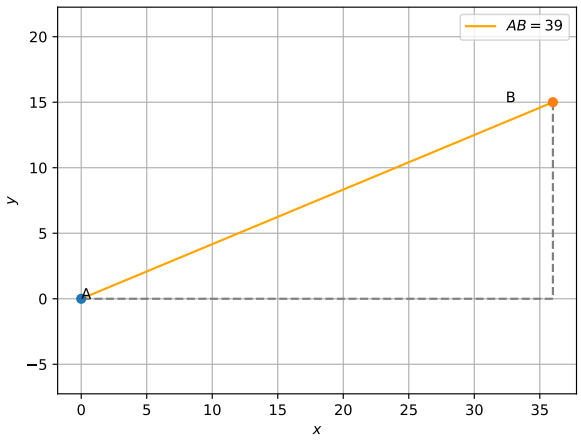

Fig. 1