



Assignment - Vector

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1 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

2 Solution

The distance between the points A and B is given

$$\mathbf{A} = (0 \ 0) \tag{1}$$

$$\mathbf{B} = (36 \ 15) \tag{2}$$

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

where

$$\mathbf{A} - \mathbf{B} = \begin{pmatrix} -36 \\ -15 \end{pmatrix} \quad (4)$$

$$d = \sqrt{(\mathbf{A} - \mathbf{B})^T (\mathbf{A} - \mathbf{B})} \quad (5)$$

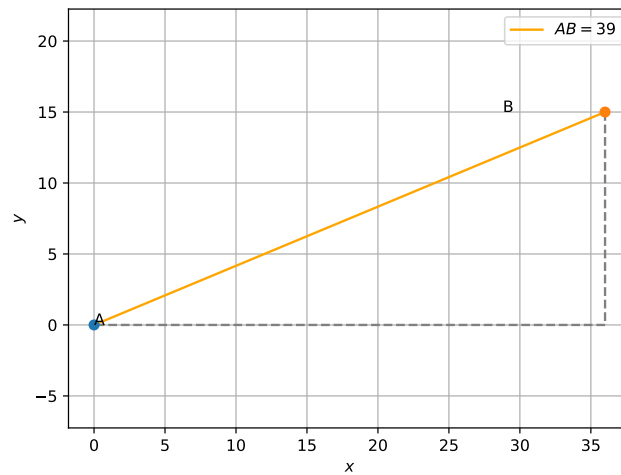
$$d = \sqrt{\begin{pmatrix} -36 \\ -15 \end{pmatrix} \begin{pmatrix} -36 & -15 \end{pmatrix}} \quad (6)$$

$$d = \sqrt{1296 + 225} \quad (7)$$

$$d = \sqrt{1521} \quad (8)$$

$$d = 39 \quad (9)$$

3 Figure



4 Code Link

<https://github.com/sssurajit/fwc/blob/main/vector/codes/vector.py>

Execute the code by using the command
python3 vector.py