भारतीय प्रौद्योगिकी संस्थान हैदराबाद
Indian Institute of Technology Hyderabad

Assignment - Vector

Surajit Sarkar

December 31, 2022

Contents

1 Problem **1**

2 Solution **1**

3 Figure **2**

4 Code Link **2**

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 betwen the points A and B is given

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

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

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

where

$$\mathbf{A}-\mathbf{B}=\begin{pmatrix}-36\\-15\end{pmatrix} \tag{4}$$

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

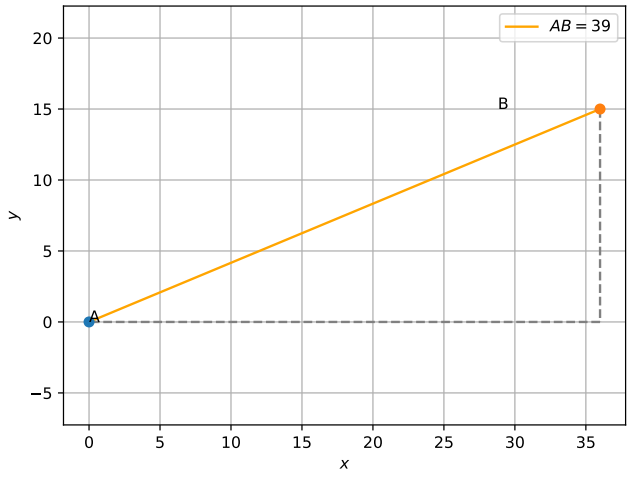
$$\mathbf{d}=\sqrt{\begin{pmatrix}-36\\-15\end{pmatrix}\left(-36-15\right)} \tag{6}$$

$$\mathbf{d}=\sqrt{1296+225} \tag{7}$$

$$\mathbf{d}=\sqrt{1521} \tag{8}$$

$$\mathbf{d}=39 \tag{9}$$

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