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

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

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

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

where

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

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

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

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

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

$$\mathbf{d} = 39$$

III. Code Link

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

Execute the code by using the command **python3 vector.py**

IV. Figure