

Assignment 4

Keshav Roy

Find Python Codes from below link

https://github.com/KeshavRoy/Assignment_4

and latex-tikz codes from

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1 EXAMPLES 1

1.1 Question 2

Find the distance between the following pairs of points

$$\begin{pmatrix} 4 \\ -7 \end{pmatrix}, \begin{pmatrix} -1 \\ 5 \end{pmatrix} \quad (1.1.1)$$

1.2 Solution

The distance between two vectors **A** and **B** is given by

$$\|\mathbf{A} - \mathbf{B}\| = \sqrt{(\mathbf{A} - \mathbf{B})^\top (\mathbf{A} - \mathbf{B})} \quad (1.2.1)$$

$$\mathbf{A} - \mathbf{B} = \begin{pmatrix} 4 \\ -7 \end{pmatrix} - \begin{pmatrix} -1 \\ 5 \end{pmatrix} \quad (1.2.2)$$

$$\mathbf{A} - \mathbf{B} = \begin{pmatrix} 5 \\ -12 \end{pmatrix} \quad (1.2.3)$$

$$(\mathbf{A} - \mathbf{B})^\top = \begin{pmatrix} 5 & -12 \end{pmatrix} \quad (1.2.4)$$

$$(\mathbf{A} - \mathbf{B})^\top = (5 \quad -12) \quad (1.2.5)$$

by replacing (1.2.3) and (1.2.5) in (1.2.1)

$$\begin{aligned} &= \sqrt{(5 \quad -12) \begin{pmatrix} 5 \\ -12 \end{pmatrix}} \\ &= \sqrt{(25 + 144)} \\ &= 13 \end{aligned} \quad (1.2.6)$$

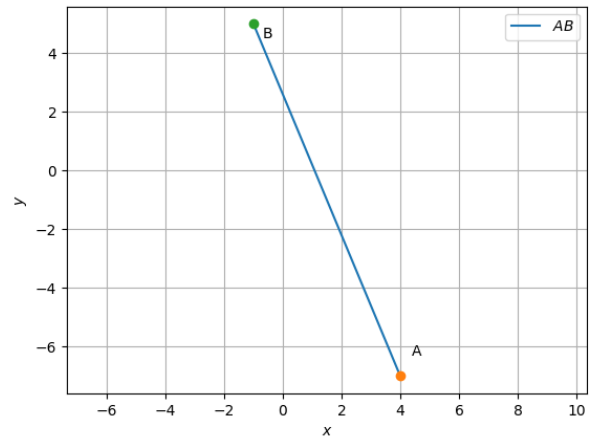


Fig. 0