Assignment 5

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Find Python Codes from below link

https://github.com/AnilMondedla/Python/Assignment_5

and latex-tikz codes from

https://github.com/AnilMondedla/Python/Assignment_5

1 Examples 1

1.1 Question 1

Find the distance between the following pairs of points

$$\begin{pmatrix}2\\3\end{pmatrix},\begin{pmatrix}5\\7\end{pmatrix} \tag{1.1.1}$$

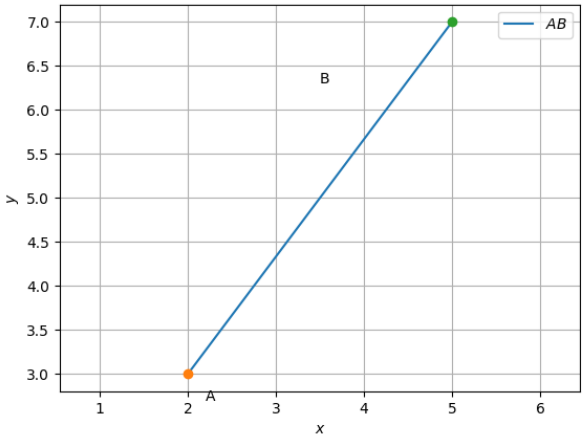

Fig. 0

1.2 Solution

The distance between two vectors is given by

$$\|\mathbf{A}-\mathbf{B}\| \tag{1.2.1}$$

From (1.2.1)

$$\|\mathbf{A}-\mathbf{B}\| = \sqrt{\left(\mathbf{A}-\mathbf{B}\right)^{\mathsf{T}}\left(\mathbf{A}-\mathbf{B}\right)} \tag{1.2.2}$$

$$= \sqrt{\left(\begin{pmatrix}2\\3\end{pmatrix}-\begin{pmatrix}5\\7\end{pmatrix}\right)^{\mathsf{T}}\left(\begin{pmatrix}2\\3\end{pmatrix}-\begin{pmatrix}5\\7\end{pmatrix}\right)} \tag{1.2.3}$$

$$= \sqrt{\begin{pmatrix}-3\\-4\end{pmatrix}^{\mathsf{T}}\begin{pmatrix}-3\\-4\end{pmatrix}} \tag{1.2.4}$$

$$= \sqrt{\begin{pmatrix}-3 & -4\end{pmatrix}\begin{pmatrix}-3\\-4\end{pmatrix}} \tag{1.2.5}$$

$$= \sqrt{\left(9+16\right)}$$

$$= 5$$