Question-1-1.9-9

EE24BTECH11038 - MALAKALA BALA SUBRAHMANYA ARAVIND

Question:
Find the distance between the points $\mathbf{A}\left(-\frac{7}{3},5\right)$ and $\mathbf{B}\left(\frac{2}{3},5\right)$
Solution

Variable	Description	Formula
A	A Point to be plotted	$A = \begin{pmatrix} \frac{-7}{3} \\ 5 \end{pmatrix}$
B	A Point to be plotted	$B = \begin{pmatrix} \frac{2}{3} \\ 5 \end{pmatrix}$

TABLE 0: variables used

$$\mathbf{A} - \mathbf{B} = \begin{pmatrix} -3 \\ 0 \end{pmatrix} \tag{0.1}$$

$$(\mathbf{A} - \mathbf{B})^T (\mathbf{A} - \mathbf{B}) = 9 \tag{0.2}$$

Thus, the desired distance is

$$d = \|\mathbf{A} - \mathbf{B}\| = \sqrt{9} \tag{0.3}$$

$$\implies d = 3 \tag{0.4}$$

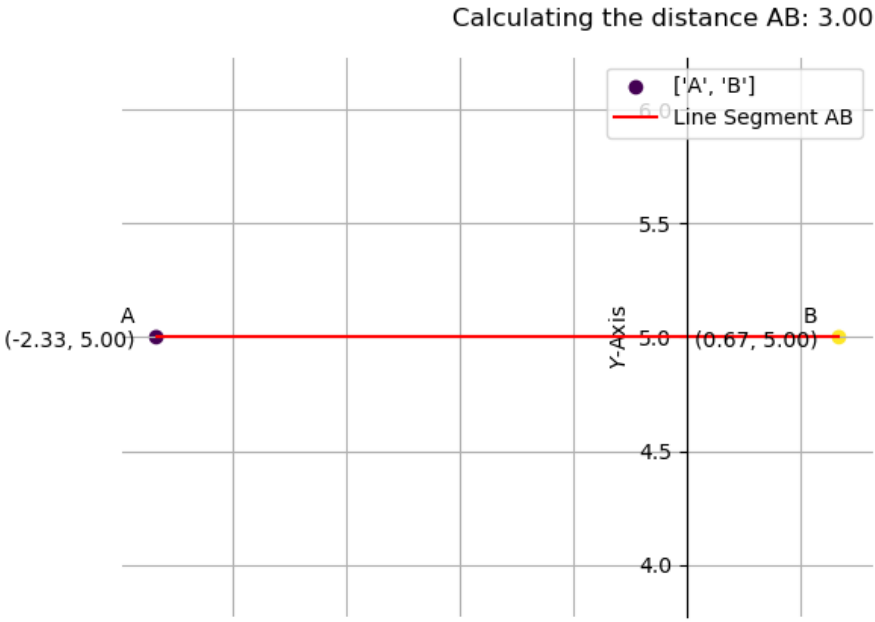
Calculating the distance AB: 3.00
['A', 'B']
Line Segment AB
5.5
A
(-2.33, 5.00)
Y-Axis
5.0
B
(0.67, 5.00)
4.5
4.0

Fig. 0.1