1.9.5

EE25BTECH11016 - Taraka Abhinav

Question:
Find the distance between the points $\left(0, 2\sqrt{5}\right)$ and $\left(-2\sqrt{5}, 0\right)$. (10, 2021)

Solution:

Symbol	Description
$\mathbf{A}$	Point $\left(0, 2\sqrt{5}\right)$
$\mathbf{B}$	Point $\left(-2\sqrt{5}, 0\right)$
d	Distance between A and B

TABLE 0: Variables Used

$$\mathbf{A} = \begin{pmatrix} 0 \\ 2\sqrt{5} \end{pmatrix}, \quad \mathbf{B} = \begin{pmatrix} -2\sqrt{5} \\ 0 \end{pmatrix} \tag{1}$$

The distance between two points is given by

$$d = \|\mathbf{A} - \mathbf{B}\| \tag{2}$$

Substituting values,

$$d = \left\| \begin{pmatrix} 0 \\ 2\sqrt{5} \end{pmatrix} - \begin{pmatrix} -2\sqrt{5} \\ 0 \end{pmatrix} \right\| \tag{3}$$

$$= \left\| \begin{pmatrix} 2\sqrt{5} \\ 2\sqrt{5} \end{pmatrix} \right\| \tag{4}$$

$$= \sqrt{(2\sqrt{5})^2 + (2\sqrt{5})^2} \tag{5}$$

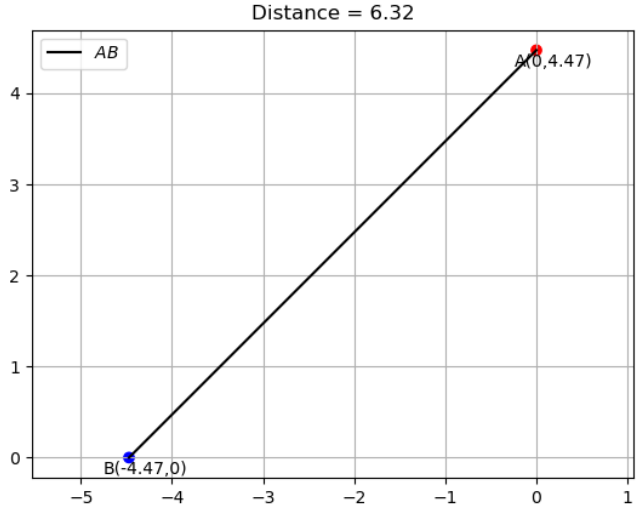
Simplifying,

$$d = \sqrt{20 + 20} \tag{6}$$

$$= \sqrt{40} \tag{7}$$

$$= 2\sqrt{10} \tag{8}$$

$$\implies d = \boxed{2\sqrt{10}} \tag{9}$$


Distance = 6.32
AB
A(0,4.47)
B(-4.47,0)
4
3
2
1
0
−5
−4
−3
−2
−1
0
1