EE25BTECH11021 - Dhanush sagar

question(1.9.10):

The distance between the point
$$\mathbf{A} = \begin{pmatrix} 0 \\ 6 \end{pmatrix}$$
, $\mathbf{B} = \begin{pmatrix} 0 \\ -2 \end{pmatrix}$ is (0.1)

solution:

Let
$$\mathbf{A} = \begin{pmatrix} 0 \\ 6 \end{pmatrix}$$
, $\mathbf{B} = \begin{pmatrix} 0 \\ -2 \end{pmatrix}$. (0.2)

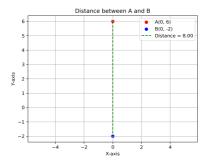
The distance between **A** and **B** is $d(\mathbf{A}, \mathbf{B}) = \|\mathbf{A} - \mathbf{B}\|_2$. (0.3)

$$\mathbf{A} - \mathbf{B} = \begin{pmatrix} 0 \\ 6 \end{pmatrix} - \begin{pmatrix} 0 \\ -2 \end{pmatrix} = \begin{pmatrix} 0 \\ 8 \end{pmatrix}. \tag{0.4}$$

$$\|\mathbf{A} - \mathbf{B}\|_2 = \sqrt{(\mathbf{A} - \mathbf{B})^T (\mathbf{A} - \mathbf{B})}.$$
 (0.5)

$$= \sqrt{\left(0 - 8\right) \binom{0}{8}} = \sqrt{0^2 + 8^2} = \sqrt{64}. \tag{0.6}$$

conclusion: The distance between **A** and **B** is = 8. (0.7)



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