1.9.10

EE24BTECH11020 - Ellanti Rohith

Question:The distance between the points $\mathbf{A}\begin{pmatrix}0\\6\end{pmatrix}$ and $\mathbf{B}\begin{pmatrix}0\\-2\end{pmatrix}$ is _____

Solution: We know that distance between two points $\mathbf{A}$ and $\mathbf{B}$ is $\sqrt{(\mathbf{A}-\mathbf{B})^\top(\mathbf{A}-\mathbf{B})}$

$$\because \mathbf{A}-\mathbf{B} = \begin{pmatrix}0\\6\end{pmatrix} - \begin{pmatrix}0\\-2\end{pmatrix} = \begin{pmatrix}0\\8\end{pmatrix}, \tag{0.1}$$

$$\sqrt{(\mathbf{A}-\mathbf{B})^\top(\mathbf{A}-\mathbf{B})} = \sqrt{\begin{pmatrix}0 & 8\end{pmatrix}\begin{pmatrix}0\\8\end{pmatrix}} = \sqrt{0+64} = 8 \tag{0.2}$$

Thus, the desired distance is $\mathbf{A}$ and $\mathbf{B}$ is 8 units.