

1.10.6

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Question:

Find the unit vector in the direction of PQ , where \mathbf{P} and \mathbf{Q} have coordinates $(5, 0, 8)$ and $(3, 3, 2)$, respectively.

Solution:

Given that

$$\mathbf{P} = \begin{pmatrix} 5 \\ 0 \\ 8 \end{pmatrix}, \mathbf{Q} = \begin{pmatrix} 3 \\ 3 \\ 2 \end{pmatrix}$$

The unit vector in the direction of PQ is

$$\frac{\mathbf{Q} - \mathbf{P}}{\|\mathbf{Q} - \mathbf{P}\|} = \frac{1}{7} \begin{pmatrix} -2 \\ 3 \\ -6 \end{pmatrix} \quad (0.1)$$

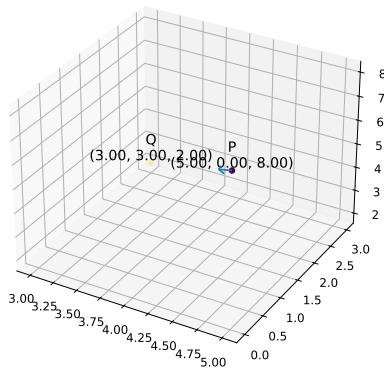


Fig. 0.1: Unit vector in the direction of PQ