Problem 2.2.16

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September 3, 2025

Question

Question:
The angle between the planes

$$\vec{r} \cdot (2\hat{i} - 3\hat{j} + \hat{k}) = 1 \text{ and}$$

$$\vec{r} \cdot (\hat{i} - \hat{j}) = 4$$

Solution

Solution:

Let P_1 and P_2 are the planes given respectively.

The normal vector of the planes, say n_1 and n_2 are:

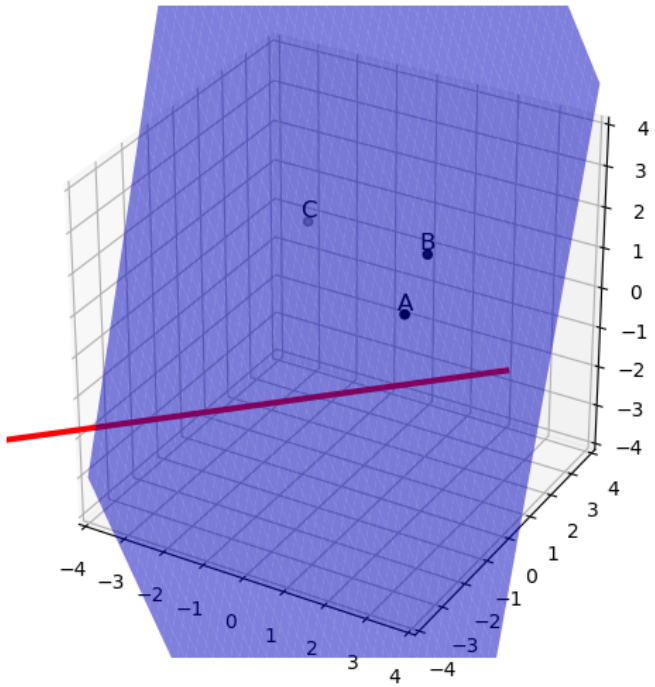
$$\vec{n_1} = \begin{pmatrix} 2 \\ -3 \\ 1 \end{pmatrix} \tag{3.1}$$

$$\vec{n_1} = \begin{pmatrix} 1 \\ -1 \\ 0 \end{pmatrix} \tag{3.2}$$

Thus, the cosine of the angle between the two is

$$cos\theta = \frac{\vec{n_1} \cdot \vec{n_1}}{|n_1||n_2|} \tag{3.3}$$

$$= \frac{5}{\sqrt{14} \times \sqrt{2}} = \frac{5}{\sqrt{28}} \tag{3.4}$$


C
B
A
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