# 1.11.17

AI24BTECH11031 - Shivram S

**Question:**

Find the direction ratios of the vector $3\mathbf{a} + 2\mathbf{b}$ where $\mathbf{a} = \mathbf{i} + \mathbf{j} - 2\mathbf{k}$ and $\mathbf{b} = 2\mathbf{i} - 4\mathbf{j} + 5\mathbf{k}$.

**Solution:**

$$3\mathbf{a} + 2\mathbf{b} = 3\begin{pmatrix}1\\1\\-2\end{pmatrix} + 2\begin{pmatrix}2\\-4\\5\end{pmatrix} = \begin{pmatrix}7\\-5\\4\end{pmatrix} \tag{0.1}$$

Hence the direction ratios of the the vector are $7, -5, 4$.

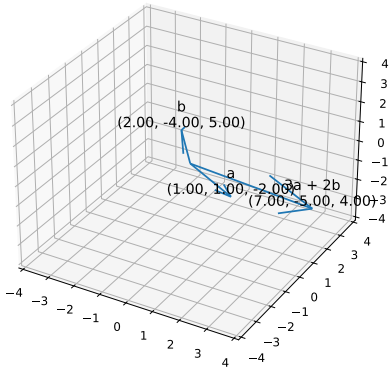


Fig. 0.1: Vectors $a$, $b$ and $3a + 2b$.