1.4.12

EE24BTECH11055 - Sai Akhila Reddy Turpu

Question:
The position vector of the point which divides the join of points $2\mathbf{a}-3\mathbf{b}$ and $\mathbf{a}+\mathbf{b}$ in the ratio 3 : 1 is:
Solution: Given

Vector	Coordinates
A	$2\mathbf{a}-3\mathbf{b}$
B	$\mathbf{a}+\mathbf{b}$
C	Vector dividing AB in the ratio 3:1

TABLE 0: Given Values

Let **C** divides **A** and **B** in the ratio 3:1
Using Section Formula(k=3)

$$C = \frac{1}{3+1}\left(3B + A\right) \tag{0.1}$$

$$C = \frac{1}{4}\left((3a + 3b) + (2a - 3b)\right) \tag{0.2}$$

$$C = \frac{5}{4}a \tag{0.3}$$