

Ex 1.17

$$\begin{aligned} \text{a) } 3\vec{a} - 4\vec{b} + \vec{c} &= 3\begin{pmatrix} 5 \\ -3 \end{pmatrix} - 4\begin{pmatrix} 4 \\ -4 \end{pmatrix} + \begin{pmatrix} 1/2 \\ 0 \end{pmatrix} = \begin{pmatrix} 15 - 16 + 1/2 \\ -9 + 16 + 0 \end{pmatrix} \\ &= \begin{pmatrix} -1 + 1/2 \\ 7 \end{pmatrix} = \begin{pmatrix} -2/2 + 1/2 \\ 7 \end{pmatrix} = \underline{\underline{\begin{pmatrix} -1/2 \\ 7 \end{pmatrix}}} \end{aligned}$$

$$\begin{aligned} \text{b) } \vec{a} - 2\vec{b} + \frac{1}{2}\vec{c} &= \begin{pmatrix} 5 \\ -3 \end{pmatrix} - 2\begin{pmatrix} 4 \\ -4 \end{pmatrix} + \frac{1}{2}\begin{pmatrix} 1/2 \\ 0 \end{pmatrix} = \begin{pmatrix} 5 - 8 + 1/4 \\ -3 + 8 + 0 \end{pmatrix} \\ &= \begin{pmatrix} -3 + 1/4 \\ 5 \end{pmatrix} = \begin{pmatrix} -12/4 + 1/4 \\ 5 \end{pmatrix} = \underline{\underline{\begin{pmatrix} -11/4 \\ 5 \end{pmatrix}}} \end{aligned}$$

$$\begin{aligned} \text{c) } -5\vec{a} - 3\vec{b} - 8\vec{c} &= -5\begin{pmatrix} 5 \\ -3 \end{pmatrix} - 3\begin{pmatrix} 4 \\ -4 \end{pmatrix} - 8\begin{pmatrix} 1/2 \\ 0 \end{pmatrix} = \begin{pmatrix} -25 - 12 - 8/2 \\ 15 + 12 + 0 \end{pmatrix} \\ &= \begin{pmatrix} -37 - 4 \\ 27 \end{pmatrix} = \underline{\underline{\begin{pmatrix} -41 \\ 27 \end{pmatrix}}} \end{aligned}$$

Ex 1.18

$$k\vec{a} + m\vec{b} = \vec{c} \Leftrightarrow k\begin{pmatrix} 2 \\ 4 \end{pmatrix} + m\begin{pmatrix} 3 \\ -9 \end{pmatrix} = \begin{pmatrix} 12 \\ -6 \end{pmatrix}$$

$$\Leftrightarrow \begin{cases} (1) & 2k + 3m = 12 & | \cdot 3 \\ (2) & 4k - 9m = -6 & | \cdot 1 \end{cases} \Rightarrow \begin{array}{r} 6k + 9m = 36 \\ + \quad 4k - 9m = -6 \\ \hline 10k \quad \quad = 30 \\ \underline{\underline{k = 3}} \end{array}$$

dans (1)

$$\Rightarrow 2 \cdot 3 + 3m = 12 \Leftrightarrow 6 + 3m = 12$$

$$\Leftrightarrow 3m = 6$$

$$\Leftrightarrow \underline{\underline{m = 2}}$$