VECTOR ALGEBRA

Answer ALL questions in the spaces provided for your answers.

Where your answer is a fraction, write it as 1/3 ; -1/3 ; 5/4 or -7/2 where appropriate.

1. Given that $\underline{a} = \begin{pmatrix}5\\2\end{pmatrix}$, $\underline{b} = \begin{pmatrix}6\\0\end{pmatrix}$ and $\underline{c} = \begin{pmatrix}-3\\-2\end{pmatrix}$, determine:

(a) $\underline{a} + \underline{b} =$ ( )

(b) $\underline{a} - \underline{b} =$ ( )

(c) $2\underline{a} - \underline{b} + \underline{c} =$ ( )

(d) $3\underline{a} - 2\underline{b} - \underline{c} =$ ( )

(e) $\underline{a} - 3\underline{b} - 4\underline{c} =$ ( )

(f) $\frac{1}{2}\underline{b} =$ ( )

(g) $\frac{1}{3}\underline{c} =$ ( )

2. Given that $\underline{a} = \begin{pmatrix}2\\5\end{pmatrix}$, $\underline{b} = \begin{pmatrix}3\\-3\end{pmatrix}$ and $\underline{c} = \begin{pmatrix}4\\6\end{pmatrix}$, determine the following vectors:

(a) $\underline{a} + \underline{b} =$ ( )

(b) $\underline{a} + \underline{b} + \underline{c} =$ ( )

(c) $2\underline{a} + \frac{1}{3}\underline{b} =$ ( )

(d) $\underline{a} - \frac{2}{3}\underline{b} + \frac{1}{2}\underline{c} =$ ( )

(e) $3\underline{a} - \underline{b} + 2\underline{c} =$ ( )

(f) $\frac{1}{2}\underline{a} - \underline{b} + \underline{c} =$ ( )

(g) $\underline{a} - \underline{b} + \underline{c} =$ ( )

(h) $\underline{a} + \underline{b} - \underline{c} =$ ( )