Q2 (a) $2u + 3v = \begin{pmatrix}4\\6\end{pmatrix} + \begin{pmatrix}-12\\15\end{pmatrix} = \begin{pmatrix}-8\\21\end{pmatrix}$

(b) $3u - 6v = \begin{pmatrix}6\\9\end{pmatrix} - \begin{pmatrix}-24\\30\end{pmatrix} = \begin{pmatrix}30\\-21\end{pmatrix}$

(c) $3w + 2v = \begin{pmatrix}-3\\-9\end{pmatrix} + \begin{pmatrix}-8\\10\end{pmatrix} = \begin{pmatrix}-11\\1\end{pmatrix}$

(d) $4u - 2w = \begin{pmatrix}8\\12\end{pmatrix} - \begin{pmatrix}-2\\-6\end{pmatrix} = \begin{pmatrix}10\\18\end{pmatrix}$

(e) $-3u - 4v = \begin{pmatrix}-6\\-9\end{pmatrix} - \begin{pmatrix}-16\\-20\end{pmatrix} = \begin{pmatrix}10\\11\end{pmatrix}$

(f) $3w - 4u = \begin{pmatrix}-3\\-9\end{pmatrix} - \begin{pmatrix}8\\12\end{pmatrix} = \begin{pmatrix}-11\\-21\end{pmatrix}$

(g) $3u - 6v + 2w = \begin{pmatrix}6\\9\end{pmatrix} - \begin{pmatrix}-24\\30\end{pmatrix} + \begin{pmatrix}-2\\-6\end{pmatrix} = \begin{pmatrix}28\\-27\end{pmatrix}$

(h) $2u + 3v - 4w = \begin{pmatrix}4\\6\end{pmatrix} + \begin{pmatrix}-12\\15\end{pmatrix} - \begin{pmatrix}-4\\-12\end{pmatrix} = \begin{pmatrix}-4\\33\end{pmatrix}$

(i) $3u - 2v + w = \begin{pmatrix}6\\9\end{pmatrix} - \begin{pmatrix}-8\\10\end{pmatrix} + \begin{pmatrix}-1\\-3\end{pmatrix} = \begin{pmatrix}13\\16\end{pmatrix}$

## Question 4

(a) $2u + 3v = \begin{pmatrix}4\\6\\8\end{pmatrix} + \begin{pmatrix}12\\24\\0\end{pmatrix} = \begin{pmatrix}16\\30\\8\end{pmatrix}$ (b) $3u - 6v = \begin{pmatrix}6\\9\\12\end{pmatrix} - \begin{pmatrix}24\\48\\0\end{pmatrix} = \begin{pmatrix}-18\\-39\\12\end{pmatrix}$

(c) $3w + 2v = \begin{pmatrix}-6\\15\\-3\end{pmatrix} + \begin{pmatrix}8\\16\\0\end{pmatrix} = \begin{pmatrix}2\\31\\-3\end{pmatrix}$ (d) $4u - 2w = \begin{pmatrix}8\\12\\16\end{pmatrix} - \begin{pmatrix}-4\\10\\-2\end{pmatrix} = \begin{pmatrix}12\\2\\18\end{pmatrix}$

(e) $-3u-4w = \begin{pmatrix}-6\\-9\\-12\end{pmatrix} - \begin{pmatrix}16\\32\\0\end{pmatrix} = \begin{pmatrix}-22\\41\\-12\end{pmatrix}$

(f) $3w-4u = \begin{pmatrix}-6\\15\\-3\end{pmatrix} - \begin{pmatrix}8\\12\\16\end{pmatrix} = \begin{pmatrix}-14\\3\\-13\end{pmatrix}$

(g) $3u-6v+2w = \begin{pmatrix}6\\9\\12\end{pmatrix} - \begin{pmatrix}24\\32\\0\end{pmatrix} + \begin{pmatrix}-4\\16\\-2\end{pmatrix} = \begin{pmatrix}26\\-13\\10\end{pmatrix}$

(h) $2u+3v-4w = \begin{pmatrix}4\\6\\8\end{pmatrix} + \begin{pmatrix}12\\24\\0\end{pmatrix} - \begin{pmatrix}-8\\20\\-4\end{pmatrix} = \begin{pmatrix}24\\10\\12\end{pmatrix}$