به نام خدا

تمرین‌های سری ۱

1 Describe geometrically (line, plane, or all of $\mathbf{R}^3$) all linear combinations of

(a) $\begin{bmatrix}1\\2\\3\end{bmatrix}$ and $\begin{bmatrix}3\\6\\9\end{bmatrix}$ (b) $\begin{bmatrix}1\\0\\0\end{bmatrix}$ and $\begin{bmatrix}0\\2\\3\end{bmatrix}$ (c) $\begin{bmatrix}2\\0\\0\end{bmatrix}$ and $\begin{bmatrix}0\\2\\2\end{bmatrix}$ and $\begin{bmatrix}2\\2\\3\end{bmatrix}$

6 Every combination of $\boldsymbol{v} = (1, -2, 1)$ and $\boldsymbol{w} = (0, 1, -1)$ has components that add to _____. Find c and d so that $c\boldsymbol{v} + d\boldsymbol{w} = (3, 3, -6)$.

26 What combination $c\begin{bmatrix}\mathbf{1}\\\mathbf{2}\end{bmatrix} + d\begin{bmatrix}\mathbf{3}\\\mathbf{1}\end{bmatrix}$ produces $\begin{bmatrix}\mathbf{14}\\\mathbf{8}\end{bmatrix}$? Express this question as two equations for the coefficients c and d in the linear combination.