Problem 1

Are the vectors $\begin{bmatrix} 1 \\ 2 \\ -2 \end{bmatrix}$ and $\begin{bmatrix} 1 \\ 0 \\ -2 \end{bmatrix}$ linearly dependent or linearly independent?

Problem 2

Are the vectors $\begin{bmatrix} 1 \\ 2 \\ -2 \end{bmatrix}$, $\begin{bmatrix} 0 \\ 2 \\ -2 \end{bmatrix}$, $\begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix}$ and $\begin{bmatrix} -2 \\ 3 \\ 1 \end{bmatrix}$ linearly dependent or linearly independent?

Problem 3

Are the vectors $\begin{bmatrix} 2 \\ 1 \\ -2 \end{bmatrix}$, $\begin{bmatrix} 0 \\ 2 \\ -2 \end{bmatrix}$ and $\begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix}$ linearly dependent or linearly independent?

Problem 4

Are the vectors $\begin{bmatrix} 2 \\ 1 \\ -2 \end{bmatrix}$, $\begin{bmatrix} 0 \\ 2 \\ -2 \end{bmatrix}$ and $\begin{bmatrix} 2 \\ 3 \\ -4 \end{bmatrix}$ linearly dependent or linearly independent?

Problem 5

Are the vectors $v_1 = x^2 + 1$, $v_2 = x + 2$ and $v_3 = x^2 + 2x + 5$ linearly dependent or linearly independent?

Problem 6

Are the vectors $v_1 = x^2 + 1$, $v_2 = x + 2$ and $v_3 = x^2 + 2x$ linearly dependent or linearly independent?

Problem 7

Determine if $\mathcal{B} = \left\{ \begin{bmatrix} -1 \\ 2 \end{bmatrix}, \begin{bmatrix} 3 \\ -1 \end{bmatrix} \right\}$ is a basis for $\mathbb{R}^2$.

Problem 8

Determine if $\mathcal{W} = \left\{ \begin{bmatrix} 2 \\ 1 \end{bmatrix}, \begin{bmatrix} 0 \\ -1 \end{bmatrix}, \begin{bmatrix} -1 \\ 2 \end{bmatrix} \right\}$ is a basis for $\mathbb{R}^2$.