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Assignment readQ3-2 due 02/09/2024 at 08:01am EST

Problem 1. **(1 point)**

Let $W = \left\{ \begin{bmatrix} -x \\ y \end{bmatrix} \in \mathbb{R}^2 : x \in \mathbb{R} \right\}$. Give a value of y so that W is a subspace.

$y =$ ___

Give a value of y so that W is not a subspace.

$y =$ ___

Answer(s) submitted:

- 0
- 1

submitted: (correct)
recorded: (correct)

Problem 2. **(1 point)**

Let $\vec{v}_1 = \begin{bmatrix} 3 \\ -4 \\ 1 \end{bmatrix}$ and $\vec{v}_2 = \begin{bmatrix} 2 \\ 3 \\ -4 \end{bmatrix}$.

Give a vector $\vec{v}_3$ so that the vectors $\vec{v}_1, \vec{v}_2, \vec{v}_3$ are **not** linearly independent.

$\vec{v}_3 = \begin{bmatrix} \_\_\_ \\ \_\_\_ \\ \_\_\_ \end{bmatrix}$

Give a vector $\vec{v}_3$ so that the vectors $\vec{v}_1, \vec{v}_2, \vec{v}_3$ **are** linearly independent.

$\vec{v}_3 = \begin{bmatrix} \_\_\_ \\ \_\_\_ \\ \_\_\_ \end{bmatrix}$

Answer(s) submitted:

- $\begin{bmatrix} 5 \\ -1 \\ -3 \end{bmatrix}$
- $\begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}$

submitted: (correct)
recorded: (correct)

Problem 3. **(1 point)**

Let $\vec{v}_1 = \begin{bmatrix} 4 \\ -2 \\ 4 \end{bmatrix}$ and $\vec{v}_2 = \begin{bmatrix} 2 \\ 1 \\ -1 \end{bmatrix}$ be a basis for a subspace V of $\mathbb{R}^3$, and let $A = \begin{bmatrix} \vec{v}_1 & \vec{v}_2 \end{bmatrix}$.

What is $\text{rank}(A)$?

$\text{rank}(A) =$ ___

Find the coordinates of $\vec{w} = \begin{bmatrix} 12 \\ -2 \\ 6 \end{bmatrix}$ with respect to this basis.

$c_1 =$ ___

$c_2 =$ ___

Answer(s) submitted:

- 2
- 2
- 2

submitted: (correct)
recorded: (correct)