Problem 1. (1 point)

Consider the image of the linear transformation $T(\vec{x}) = A\vec{x}$, where $A = \begin{bmatrix} 3 & 1 \\ 6 & 2 \end{bmatrix}$. Complete the following statement:

The image of T consists of all vectors of the form $k \begin{bmatrix} \underline{\quad} \\ \underline{\quad} \end{bmatrix}$, where k is some scalar.

Answer(s) submitted:

- $\begin{bmatrix} 1 \\ 2 \end{bmatrix}$

submitted: (correct)
recorded: (correct)

Problem 2. (1 point)

Give a vector $\vec{z}$ in the span of the vectors $\vec{v} = \begin{bmatrix} 5 \\ -5 \\ 1 \end{bmatrix}$ and $\vec{w} = \begin{bmatrix} 1 \\ 1 \\ -2 \end{bmatrix}$.

$\vec{z} = \begin{bmatrix} \underline{\quad} \\ \underline{\quad} \\ \underline{\quad} \end{bmatrix}$

Answer(s) submitted:

- $\begin{bmatrix} 6 \\ -4 \\ -1 \end{bmatrix}$

submitted: (correct)
recorded: (correct)

Problem 3. (1 point)

Consider the linear transformation $T(\vec{x}) = \begin{bmatrix} 3 & 1 \\ 9 & 3 \end{bmatrix} \vec{x}$.

(a) Is the vector $\vec{v} = \begin{bmatrix} 1 \\ 3 \end{bmatrix}$ in the kernel of T? [?/yes/no]

(b) Give a vector $\vec{w}$ that is in $\ker(T)$.

$\vec{w} = \begin{bmatrix} \underline{\quad} \\ \underline{\quad} \end{bmatrix}$

Answer(s) submitted:

- no
- $\begin{bmatrix} 1 \\ -3 \end{bmatrix}$

submitted: (correct)
recorded: (correct)