Question **1**

Not yet answered

Points out of 5.00

Flag question

For what value of h is the set $\left\{ \begin{bmatrix} 1 \\ -1 \\ 3 \end{bmatrix}, \begin{bmatrix} -5 \\ 7 \\ 8 \end{bmatrix}, \begin{bmatrix} 1 \\ 1 \\ h \end{bmatrix} \right\}$ linearly **dependent**?

Answer: none

Question **2**

Not yet answered

Points out of 2.00

Flag question

If $\mathbf{v}_1, \ldots, \mathbf{v}_2$ are in $\mathbb{F}^4$ and $\mathbf{v}_3$ is ***not*** a linear combination of $\mathbf{v}_1,\ \mathbf{v}_2,\ \mathbf{v}_4$, then $\{\mathbf{v}_1,\ \mathbf{v}_2,\ \mathbf{v}_3,\ \mathbf{v}_4\}$ is linearly independent.

Select one:

- (•) True
- ( ) False

Question **3**

Not yet answered

Points out of 2.00

Flag question

If $\mathbf{v}_1, \ldots, \mathbf{v}_4$ are linearly independent vectors in $\mathbb{F}^4$, then $\{\mathbf{v}_1, \mathbf{v}_2, \mathbf{v}_3\}$ is also linearly independent.

Select one:

- (•) True
- ( ) False

Question **4**

Not yet answered

Points out of 2.00

Flag question

If **x** and **y** are linearly dependent, and if **z** is in Span {**x**, **y**}, then {**x**, **y**, **z**} is linearly dependent.

Select one:

- (•) True
- ( ) False

Question **5**

Not yet answered

Points out of 2.00

Flag question

If a set in $\mathbb{F}^n$ is linearly dependent, then the set contains more vectors than there are entries in each vector.

Select one:

- (•) True
- ( ) False

Question **6**

Not yet answered

Points out of 4.00

Flag question

$Let A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$ be the standard matrix for the horizontal shear transformation, $T : \mathbb{R}^2 \to \mathbb{R}^2$, that leaves $\mathbf{e}_1$ unchanged and maps $\mathbf{e}_2$ into $\mathbf{e}_2 + 3\mathbf{e}_1$. Find

$a_{11} =$ $a_{12} =$

$a_{21} =$ $a_{22} =$

Question **7**

Not yet answered

Points out of 4.00

Flag question

Let $\mathbf{e}_1 = \begin{bmatrix} 1 \\ 0 \end{bmatrix}$, $\mathbf{e}_2 = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$, $\mathbf{y}_1 = \begin{bmatrix} 2 \\ 5 \end{bmatrix}$, $\mathbf{y}_2 = \begin{bmatrix} -1 \\ 6 \end{bmatrix}$, $\mathbf{u} = \begin{bmatrix} 3 \\ 2 \end{bmatrix}$, and let $T : \mathbb{R}^2 \to \mathbb{R}^2$ be a linear transformation that maps $\mathbf{e}_1$ into $\mathbf{y}_1$ and maps $\mathbf{e}_2$ into $\mathbf{y}_2$. Find $T(\mathbf{u}) = \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$.

(1) $x_1 =$

(2) $x_2 =$

Question **8**

Not yet answered

Points out of 2.00

Flag question

Asking whether the linear system corresponding to an augmented matrix $[\mathbf{a}_1\mathbf{a}_2\mathbf{a}_3\mathbf{b}]$ has a solution amounts to asking whether $\mathbf{b}$ is in Span$\{\mathbf{a}_1, \mathbf{a}_2, \mathbf{a}_3\}$.

Select one:

- True
- False

Question **9**

Not yet answered

Points out of 2.00

Flag question

When $\mathbf{u}$ and $\mathbf{v}$ are nonzero vectors, Span$\{\mathbf{u}, \mathbf{v}\}$ contains the line through $\mathbf{u}$ and the origin.

Select one:

- True
- False

Question **7**

Incomplete answer

Points out of 4.00

Remove flag

Let $\mathbf{e}_1 = \begin{bmatrix}1\\0\end{bmatrix}$, $\mathbf{e}_2 = \begin{bmatrix}0\\1\end{bmatrix}$, $\mathbf{y}_1 = \begin{bmatrix}2\\5\end{bmatrix}$, $\mathbf{y}_2 = \begin{bmatrix}-1\\6\end{bmatrix}$, $\mathbf{u} = \begin{bmatrix}3\\2\end{bmatrix}$, and let $T : \mathbb{R}^2 \to \mathbb{R}^2$ be a linear transformation that maps $\mathbf{e}_1$ into $\mathbf{y}_1$ and maps $\mathbf{e}_2$ into $\mathbf{y}_2$. Find $T(\mathbf{u}) = \begin{bmatrix}x_1\\x_2\end{bmatrix}$.

(1) $x_1 =$ 20/11

(2) $x_2 =$ -11/17

Please answer all parts of the question.