

Question 18

Not yet answered

Marked out of 1

Flag question

Let A be an $n \times n$ matrix with eigenvalues $\lambda_1, \dots, \lambda_n$ (repeated according to algebraic multiplicity). Then $\det(A) = \lambda_1 + \dots + \lambda_n$.

Select one:

- ☐ True
- ☒ False

Question 19

Not yet answered

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Flag question

Which of the following subset S of $\mathbb{P}_5$ is a subspace.

Select one or more:

- ☒ S is the set of all polynomials of the form $p(x) = ax^2$.
- ☒ S is the set of all polynomials of degree less than or equal to 5.
- ☐ S is the set of all polynomials of the form $p(x) = ax + 1$.
- ☐ S is the set of all polynomials with degree equal to 3.

Question 20

Not yet answered

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Flag question

The set $\mathcal{B} = \{\vec{b}_1, \vec{b}_2\}$ is a basis for $\mathbb{R}^2$. Let $T: \mathbb{R}^2 \rightarrow \mathbb{R}^2$ be a linear transformation such that $T(\vec{b}_1) = \begin{pmatrix} -2 \\ 5 \end{pmatrix}$ and $T(\vec{b}_2) = \begin{pmatrix} -4 \\ 4 \end{pmatrix}$. Find $T(3\vec{b}_1 - 2\vec{b}_2)$.

Select one:

- ☐ a. $\begin{pmatrix} 14 \\ 23 \end{pmatrix}$
- ☐ b. $\begin{pmatrix} 2 \\ 23 \end{pmatrix}$
- ☐ c. $\begin{pmatrix} 2 \\ 7 \end{pmatrix}$
- ☐ d. $\begin{pmatrix} -2 \\ 7 \end{pmatrix}$

Question 18

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Let A be an $n \times n$ matrix with eigenvalues $\lambda_1, \dots, \lambda_n$ (repeated according to algebraic multiplicity). Then $\det(A) = \lambda_1 + \dots + \lambda_n$.

Select one:

- ☐ True
- ☐ False

Question 19

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Which of the following subset S of $\mathbb{P}_5$ is a subspace.

Select one or more:

- ☐ S is the set of all polynomials of the form $p(x) = ax^2$.
- ☐ S is the set of all polynomials of degree less than or equal to 5.
- ☐ S is the set of all polynomials of the form $p(x) = ax + 1$.
- ☐ S is the set of all polynomials with degree equal to 3.

Question 16

Not yet answered

Marked out of 1

Flag question

Let A and B be $n \times n$ matrices. If A is similar to B , then $\text{Col}(A) = \text{Col}(B)$.

Select one:

- ☐ True
- ☐ False

Question 17

Not yet answered

Marked out of 1

Flag question

The vector $\vec{b} = \begin{pmatrix} 1 \\ 3 \\ -1 \end{pmatrix}$ is in the subset of $\mathbb{R}^3$ spanned by the columns of A ?

$$A = \begin{pmatrix} 2 & 0 & 1 \\ 4 & 1 & 4 \\ 2 & 0 & 1 \end{pmatrix}$$

Select one:

- ☐ a. False
- ☐ b. True

Question 14

Not yet answered

Marked out of 1

Flag question

If A, B are 2×2 matrices, then it is possible that $AB \neq BA$.

Select one:

- ☐ a. False
- ☐ b. True

Question 15

Not yet answered

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Flag question

A basis for a vector space V is a linearly independent set that is also a generating set for V .

Select one:

- ☐ True
- ☐ False

An $n \times n$ matrix A is diagonalizable if and only if there is a basis for $\mathcal{R}^n$ consisting of eigenvectors of A .

Select one:

- ☐ True
- ☐ False

The following vectors

$$\begin{bmatrix} 0 \\ 4 \\ -7 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 4 \\ 0 \\ 0 \\ 0 \\ -7 \end{bmatrix}$$

are

Select one or more:

- ☐ linearly Dependence.
- ☐ no answer.
- ☒ linearly independence.

Question 13

Not yet answered

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Flag question

Let $T : \mathbb{R}^3 \rightarrow \mathbb{R}^2$ defined by $T \left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} \right) = \begin{bmatrix} -1 \\ 3x_2 - x_3 \end{bmatrix}$

Which of the following vectors **dose not** belong to the range of T .

Select one or more:

- ☐ $\begin{bmatrix} -1 \\ 0 \end{bmatrix}$
- ☐ $\begin{bmatrix} 0 \\ 0 \end{bmatrix}$
- ☐ $\begin{bmatrix} -1 \\ -2 \end{bmatrix}$
- ☐ $\begin{bmatrix} -1 \\ 3 \end{bmatrix}$
- ☐ $\begin{bmatrix} -3 \\ -2 \end{bmatrix}$

Question 11

Not yet answered

Marked out of 1

Flag question

If V is a set that contains the 0-vector, and such that whenever $\vec{u}$ and $\vec{v}$ are in V , then $\vec{u} + \vec{v}$ is in V , then V is a vector space !

Select one:

- ☐ a. True
- ☐ b. False

Question 12

Not yet answered

Marked out of 2

Flag question

Let $Ax = b$ be a linear system such that the size of A is 3×3 and $Rank(A) = 1$ and $Rank[A|b] = 1$ then:

Select one:

- ☐ a. Non of the answers.
- ☐ b. dimension of the null space of A^T is 2.
- ☐ c. dimension of the null space of A is 0.
- ☐ d. dimension of the row space of A is 3.
- ☐ e. dimension of the column space of A is 2.

Question 9

Not yet
answered

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Flag question

The matrix equation $B^2CA^{-1} = B$ is satisfied when the matrix C equals to:

Select one:

- ☐ a. $C = (AB)^{-1}$
- ☐ b. $C = (BA)^{-1}$
- ☐ c. $C = B^{-1}A$
- ☐ d. $C = AB^{-1}$

Question 10

Not yet
answered

Marked out of 1

Flag question

For any vectors $\mathbf{v}_1, \dots, \mathbf{v}_k$ in a vector space V , if $\text{span}(\{\mathbf{v}_1, \dots, \mathbf{v}_k\})$ is a subspace, then $\{\mathbf{v}_1, \dots, \mathbf{v}_k\}$ is a generating set for the subspace.

Select one:

- ☐ True
- ☐ False

If V has basis S and W is a subspace of V , then there exists a set T contained in S which is a basis for W .

Select one:

- ☐ True
- ☐ False

theorem, there exists a subset T of S which is a basis for W . This ensures that W is sp

Question 21

Not yet answered

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Flag question

Let $Ax = b$ be a linear system such that the size of A is 5×9 and $\text{Rank}(A) = 2$ and $\text{Rank}[A|b] = 2$ then:

Select one or more:

- ☐ Non of the answers.
- ☐ the number of parameters in the general solution of $Ax = b$ is 3
- ☐ the linear system $Ax = b$ is consistent.
- ☐ the number of parameters in the general solution of $Ax = b$ is 7
- ☐ the linear system $Ax = b$ is inconsistent.

Question 22

Not yet answered

Marked out of 2

Flag question

Which of the following subset S of $M_{2 \times 2}$ is a subspace.

Select one or more:

- ☐ S is the set of all matrices with $a_{11} + a_{22} = 0$.
- ☐ S is the set of all matrices with $a_{12} = a_{21} = 0$.
- ☐ S is the set of all none zero symmetric matrices.
- ☐ S is the set of all invertible matrices.

Question 8

Not yet answered

Marked out of 2

Flag question

Let $S = \{1, x^2, x + x^3\}$

Which of the following vectors belong to Span S ?

Select one:

- ☐ a. $x^2 - 3x + 3$
- ☐ b. Non of the mentioned
- ☐ c. $x - x^2$
- ☐ d. $x^3 + 4x^2 + x - 6$

Let $Ax = b$ be a linear system such that the size of A is 3×3 and $\text{Rank}(A) = 3$ and $\text{Rank}[A|b] = 3$ then:

Select one:

- ☒ a. dimension of the null space of A is 3.
- ☐ b. dimension of the column space of A is 2.
- ☐ c. dimension of the null space of A^T is 1.
- ☐ d. Non of the answers.
- ☒ e. dimension of the row space of A is 3.

If A, B are 2×2 matrices, then it is possible that $AB = BA$.

Select one:

- ☒ a. False
- ☐ b. True

Question 6

Not yet answered

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Flag question

Let $Ax = b$ be a linear system such that the size of A is 5×9 and $\text{Rank}(A) = 2$ and $\text{Rank}[A|b] = 3$ then:

Select one or more:

- ☐ the number of parameters in the general solution of $Ax = b$ is 3
- ☐ the number of parameters in the general solution of $Ax = b$ is 7
- ☐ the linear system $Ax = b$ is inconsistent.
- ☐ the linear system $Ax = b$ is consistent.
- ☐ can't have any thing in the general solution.

Question 4

Not yet answered

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Flag question

The column space of a matrix A is the set of solutions of $Ax = b$.

Select one:

- ☐ True
☐ False

Question 5

Not yet answered

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Flag question

Every linearly independent set of vectors in R^n is contained in some basis for R^n .

Select one:

- ☐ True
☐ False

Question 3

Not yet answered

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Flag question

Let $T : \mathbb{R}^3 \rightarrow \mathbb{R}^3$ linear transformation defined by

$$T \left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} \right) = \begin{bmatrix} -3x_2 \\ x_1 + 3x_3 \\ x_1 \end{bmatrix} \text{ then the standard matrix is}$$

Select one:

- ☐ a. $\begin{bmatrix} 0 & -3 & 0 \\ 1 & 3 & 0 \\ 0 & 1 & 0 \end{bmatrix}$
- ☐ b. $\begin{bmatrix} 1 & -3 & 1 \\ 1 & 1 & 3 \\ 1 & 1 & 1 \end{bmatrix}$
- ☐ c. $\begin{bmatrix} -3 & 0 & 0 \\ 0 & 1 & 3 \\ 1 & 0 & 0 \end{bmatrix}$
- ☐ d. $\begin{bmatrix} 0 & -3 & 0 \\ 1 & 0 & 3 \\ 1 & 0 & 0 \end{bmatrix}$
- ☐ e. $\begin{bmatrix} 0 & -3 & 0 \\ 1 & 3 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

There are at least two distinct three-dimensional subspaces of P_2 .

Select one:

- ☐ True
- ☐ False

Let $Ax = b$ be a linear system such that the size of A is 3×3 and $\text{Rank}(A) = 3$ and $\text{Rank}[A|b] = 3$ then:

Select one or more:

- ☐ the linear system $Ax = b$ is inconsistent.
- ☐ the number of parameters in the general solution of $Ax = b$ is 3
- ☐ the linear system $Ax = b$ is consistent.
- ☐ Non of the answers.
- ☐ the number of parameters in the general solution of $Ax = b$ is 0

Question 1

Not yet answered

Marked out of 2

Flag question

The following vectors

$$\begin{bmatrix} 0 \\ -2 \\ 7 \end{bmatrix}, \begin{bmatrix} 4 \\ 0 \\ 1 \end{bmatrix}, \begin{bmatrix} 1 \\ 8 \\ -3 \end{bmatrix}, \begin{bmatrix} 2 \\ 3 \\ -1 \end{bmatrix}$$

are

Select one or more:

- ☐ no answer.
- ☐ linearly independence.
- ☐ linearly Dependence.

Question 2

Not yet answered

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Flag question

There exists a linear transformation T from $\mathbb{R}^3$ to $\mathbb{R}^2$ such that the kernel of T is two-dimensional.

Select one:

- ☐ a. True
- ☐ b. False

Question 19

Not yet answered

Marked out of 2

Flag question

The following vectors

$$\begin{bmatrix} 4 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 7 \\ -3 \\ 9 \end{bmatrix}, \begin{bmatrix} 2 \\ -3 \\ 0 \end{bmatrix}$$

are

Select one or more:

- ☐ linearly independence.
- ☐ linearly Dependence.
- ☐ no answer.

Question 20

Not yet answered

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There is a set of 11 vectors that span $\mathbb{R}^{17}$

Select one:

- ☐ True
- ☐ False

Question 16

Not yet answered

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Flag question

$\mathbb{R}_2$ is a subspace of $\mathbb{R}_3$

Select one:

- ☐ a. True
- ☐ b. False

Question 17

Not yet answered

Marked out of 1

Flag question

The only matrix similar to the zero matrix is itself.

Select one:

- ☐ True
- ☐ False

Question 18

Not yet answered

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For any linearly independent vectors $\mathbf{v}_1, \dots, \mathbf{v}_k$ in a vector space V , the set $\{\mathbf{v}_1, \dots, \mathbf{v}_k\}$ form a basis for a subspace of V .

Select one:

- ☐ True
- ☐ False

Question **22**

Not yet
answered

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Symmetric matrices are always diagonalizable.

Select one:

- ☐ True
- ☐ False

Which of the following subset S of $M_{2 \times 2}$ is a subspace.

Select one or more:

- ☒ S is the set of all diagonal matrices.
- ☐ S is the set of all none zero matrices.
- ☐ S is the set of all matrices with $a_{22} = 0$.
- ☐ S is the set of all matrices with trace equal to 1.

If $\vec{u}$ and $\vec{v}$ are nonzero vectors in $\mathbb{R}^n$ and are not multiples of each other, then $\text{Span}\{\vec{u}, \vec{v}\}$ is a plane that includes the origin.

Select one:

- ☐ a. True
- ☐ b. False

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☒ S is the set of all polynomials of the form $p(x) = ax^2$.

Question 19

Not yet
answered

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Flag question

Let $Ax = b$ be a linear system such that the size of A is 3×3 and $\text{Rank}(A) = 1$ and $\text{Rank}[A|b] = 1$ then:

Select one or more:

- ☐ the linear system $Ax = b$ is consistent.
- ☐ Non of the answers.
- ☐ the linear system $Ax = b$ is inconsistent.
- ☐ the number of parameters in the general solution of $Ax = b$ is 1
- ☐ the number of parameters in the general solution of $Ax = b$ is 2

Question 20

Not yet
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If $\vec{u}$ and $\vec{v}$ are nonzero vectors in $\mathbb{R}^n$, then $\text{Span}\{\vec{u}, \vec{v}\}$ contains the line passing through $\vec{u}$ and the origin.

Select one:

- ☐ a. True
- ☐ b. False

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Quiz navigation

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جبر خطي

Question 16

Not yet
answered

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Flag question

Every set of vectors that spans R^n contains a basis for R^n .

Select one:

☒ True☐ False

Question 17

Not yet
answered

Marked out of 1

Flag question

For any linearly independent vectors $\mathbf{v}_1, \dots, \mathbf{v}_k$ in a vector space V , the set $\{\mathbf{v}_1, \dots, \mathbf{v}_k\}$ form a basis for a subspace of V .

Select one:

☐ True☐ False

Question 18

Not yet
answered

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Flag question

Which of the following subset S of $\mathbb{P}_5$ is a subspace.

Select one or more:

☐ S is the set of all polynomials with degree equal to 3.☐ S is the set of all polynomials with even degree.☐ S is the set of all polynomials of degree less than or equal to 4.☐ S is the set of all polynomials of the form $p(x) = ax^2$.

Question 15

Not yet answered

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Let $T : \mathbb{R}^3 \rightarrow \mathbb{R}^2$ defined by $T \left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} \right) = \begin{bmatrix} x_1 + x_2 x_3 \\ 3 \end{bmatrix}$

Which of the following vectors **dose not** belong to the range of T .

Select one or more:

☐ $\begin{bmatrix} -4 \\ 3 \end{bmatrix}$

☐ $\begin{bmatrix} 0 \\ 3 \end{bmatrix}$

☐ $\begin{bmatrix} 5 \\ 3 \end{bmatrix}$

☐ $\begin{bmatrix} -3 \\ -2 \end{bmatrix}$

☐ $\begin{bmatrix} 0 \\ 0 \end{bmatrix}$

Question 13

Not yet answered

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Flag question

Let $Ax = b$ be a linear system such that the size of A is 6×2 and $\text{Rank}(A) = 2$ and $\text{Rank}[A|b] = 2$ then:

Select one:

- ☐ a. dimension of the null space of A^T is 0.
- ☐ b. dimension of the row space of A is 2.
- ☐ c. dimension of the null space of A is 4.
- ☐ d. dimension of the column space of A is 3.
- ☐ e. Non of the answers.

Question 14

Not yet answered

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Flag question

Let $S = \left\{ \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \end{bmatrix}, \begin{bmatrix} 0 & 2 & 0 \\ 0 & 0 & 2 \end{bmatrix}, \begin{bmatrix} -1 & 0 & 0 \\ 0 & 0 & 1 \end{bmatrix} \right\}$

Which of the following vectors belong to Span S ?

Select one:

- ☐ a. Non of the mentioned
- ☐ b. $\begin{bmatrix} 0 & -4 & 3 \\ 0 & 0 & -1 \end{bmatrix}$
- ☐ c. $\begin{bmatrix} 0 & -2 & 0 \\ 0 & 3 & 1 \end{bmatrix}$
- ☐ d. $\begin{bmatrix} 3 & -2 & 0 \\ -3 & 3 & 1 \end{bmatrix}$

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جبر خطي

Question 16

Not yet
answered

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Flag question

Every set of vectors that spans R^n contains a basis for R^n .

Select one:

☐ True☐ False

Question 17

Not yet
answered

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Flag question

For any linearly independent vectors $\mathbf{v}_1, \dots, \mathbf{v}_k$ in a vector space V , the set $\{\mathbf{v}_1, \dots, \mathbf{v}_k\}$ form a basis for a subspace of V .

Select one:

☐ True☐ False

Question 18

Not yet
answered

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Which of the following subset S of $\mathbb{P}_5$ is a subspace.

Select one or more:

☐ S is the set of all polynomials with degree equal to 3.☐ S is the set of all polynomials with even degree.☐ S is the set of all polynomials of degree less than or equal to 4.☐ S is the set of all polynomials of the form $p(x) = ax^2$.

Question **11**

Not yet
answered

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Let $S = \{1 + x, 1 + x + x^2, 1 + x + x^2 + x^3\}$

Which of the following vectors belong to Span S ?

Select one:

- ☐ a. $4 + 4x + 2x^2 + 3x^3$
- ☐ b. Non of the mentioned
- ☐ c. $x^2 - 3x + 5$
- ☐ d. $x^2 + 5$

Question **12**

Not yet
answered

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Let A be an $n \times n$ matrix. Let e_1 be an eigenvector of A with eigenvalue 1. Then the first column of A is e_1

Select one:

- ☐ True
- ☐ False

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Question 13

Not yet
answered

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Flag question

The following vectors

$$\begin{bmatrix} 5 \\ -2 \end{bmatrix}, \begin{bmatrix} -3 \\ 1 \end{bmatrix}, \begin{bmatrix} 4 \\ 7 \end{bmatrix}$$

are

Select one or more:

- ☐ linearly independence.
- ☐ no answer.
- ☐ linearly Dependence.

Question 14

Not yet
answered

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Let $T : \mathbb{R}^3 \rightarrow \mathbb{R}^2$ defined by $T \left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} \right) = \begin{bmatrix} x_1 - x_3 \\ x_2^2 \end{bmatrix}$

Which of the following vectors **dose not** belong to the range of T .

Select one or more:

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

☐ $\begin{bmatrix} -4 \\ 0 \end{bmatrix}$

☐ $\begin{bmatrix} 3 \\ -3 \end{bmatrix}$

☐ $\begin{bmatrix} 0 \\ 0 \end{bmatrix}$

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

Question 4

Not yet answered

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For any vectors $\mathbf{v}_1, \dots, \mathbf{v}_k$ in a vector space V , if $\text{span}(\{\mathbf{v}_1, \dots, \mathbf{v}_k\})$ is a subspace, then $\{\mathbf{v}_1, \dots, \mathbf{v}_k\}$ is a generating set for the subspace.

Select one:

- ☐ True
☐ False

Question 5

Not yet answered

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If E is $m \times m$ an elementary matrix and A is an $m \times n$ matrix then the row space of EA is the same as the row space of A .

Select one:

- ☐ True
☐ False

Question 10

Not yet answered

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Flag question

If A, B are $n \times n$ matrices and $AB = I$, then $BA = I$.

Select one:

- ☐ a. False
☐ b. True

Question **1**

Not yet
answered

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question

Let A and B be $n \times n$ matrices. If A is similar to B , then $\text{Col}(A) = \text{Col}(B)$.

Select one:

- ☐ True
☐ False

Question **2**

Not yet
answered

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question

For any matrix A . If $\text{Null}(A) = \{0\}$, then A is invertible.

Select one:

- ☐ a. True
☐ b. False

Question **3**

Not yet
answered

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question

The set of matrices of the form $\begin{pmatrix} a & b \\ 0 & c \end{pmatrix}$ is a subspace of $\mathbb{M}_{2 \times 2}$.

Select one:

- ☐ a. True
☐ b. False

الرئيسية

Question 13

Not yet
answered

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The following vectors

$$\begin{bmatrix} 5 \\ -2 \end{bmatrix}, \begin{bmatrix} -3 \\ 1 \end{bmatrix}, \begin{bmatrix} 4 \\ 7 \end{bmatrix}$$

are

Select one or more:

- ☐ linearly independence.
- ☐ no answer.
- ☒ linearly Dependence.

Question 14

Not yet
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Let $T : \mathbb{R}^3 \rightarrow \mathbb{R}^2$ defined by $T \left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} \right) = \begin{bmatrix} x_1 - x_3 \\ x_2^2 \end{bmatrix}$

Which of the following vectors **dose not** belong to the range of T .

Select one or more:

- ☐ $\begin{bmatrix} 1 \\ -2 \end{bmatrix}$
- ☐ $\begin{bmatrix} -4 \\ 0 \end{bmatrix}$
- ☐ $\begin{bmatrix} 3 \\ -3 \end{bmatrix}$
- ☐ $\begin{bmatrix} 0 \\ 0 \end{bmatrix}$
- ☐ $\begin{bmatrix} -2 \\ 1 \end{bmatrix}$

Question 8

Not yet answered

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Assuming that A, B, C and D are invertible from the same size. What is the simplification of the expression $(AC^{-1})^{-1}(AC^{-1})(AC^{-1})^{-1}AD^{-1}$

Select one:

- ☐ a. D^{-1}
- ☐ b. CD^{-1}
- ☐ c. AC^{-1}
- ☐ d. $D^{-1}C$
- ☐ e. Non of the mentioned.

Question 9

Not yet answered

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Flag question

The set $\mathcal{B} = \{\vec{b}_1, \vec{b}_2\}$ is a basis for $\mathbb{R}^2$. Let $T : \mathbb{R}^2 \rightarrow \mathbb{R}^2$ be a linear transformation such that $T(\vec{b}_1) = \begin{pmatrix} 3 \\ 5 \end{pmatrix}$ and $T(\vec{b}_2) = \begin{pmatrix} -1 \\ 4 \end{pmatrix}$. Find $T(2\vec{b}_1 + 5\vec{b}_2)$.

Select one:

- ☐ a. $\begin{pmatrix} 11 \\ 30 \end{pmatrix}$
- ☐ b. $\begin{pmatrix} 0 \\ 30 \end{pmatrix}$
- ☐ c. $\begin{pmatrix} 1 \\ 30 \end{pmatrix}$
- ☐ d. $\begin{pmatrix} -1 \\ 30 \end{pmatrix}$

Question 15

Not yet answered

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$$\text{Let } S = \left\{ \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \end{bmatrix}, \begin{bmatrix} 0 & 2 & 0 \\ 0 & 0 & 2 \end{bmatrix}, \begin{bmatrix} 0 & 0 & 0 \\ -1 & 0 & 1 \end{bmatrix} \right\}$$

Which of the following vectors belong to Span S ?

Select one:

- ☐ a. Non of the mentioned
- ☐ b. $\begin{bmatrix} 1 & 3 & 1 \\ -2 & 0 & -2 \end{bmatrix}$
- ☐ c. $\begin{bmatrix} 1 & -4 & 3 \\ 2 & 0 & -1 \end{bmatrix}$
- ☐ d. $\begin{bmatrix} 3 & -2 & 0 \\ -3 & 3 & 1 \end{bmatrix}$

Question 7

Not yet
answered

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Flag question

Let $T : \mathbb{R}^3 \rightarrow \mathbb{R}^3$ linear transformation defined by $T\left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}\right) = \begin{bmatrix} -3x_2 \\ x_1 \\ -3x_1 - 4x_2 \end{bmatrix}$ then the standard matrix is

Select one:

- ☐ a. $\begin{bmatrix} 0 & -3 & 0 \\ -3 & -4 & 0 \\ 0 & 0 & 1 \end{bmatrix}$
- ☐ b. $\begin{bmatrix} -3 & 0 & 0 \\ 0 & 1 & 0 \\ -3 & -4 & 0 \end{bmatrix}$
- ☐ c. $\begin{bmatrix} 0 & -3 & 0 \\ 1 & 0 & 0 \\ -3 & -4 & 0 \end{bmatrix}$
- ☐ d. $\begin{bmatrix} 0 & 0 & -3 \\ 0 & 0 & 1 \\ 0 & -3 & -4 \end{bmatrix}$
- ☐ e. $\begin{bmatrix} 0 & -3 & 0 \\ 0 & 1 & 0 \\ -3 & 0 & -4 \end{bmatrix}$

If $A = \begin{pmatrix} 1 & 2 & 0 \\ 3 & 1 & 5 \\ -1 & 1 & -3 \end{pmatrix}$ and $\vec{b} = \begin{pmatrix} 3 \\ -1 \\ 3 \end{pmatrix}$. Then the vector $\vec{b}$ is contained in $Null(A)$.

Select one:

- ☐ a. False
- ☐ b. True

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Question 13

Not yet answered

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The following vectors

$$\begin{bmatrix} 5 \\ -2 \end{bmatrix}, \begin{bmatrix} -3 \\ 1 \end{bmatrix}, \begin{bmatrix} 4 \\ 7 \end{bmatrix}$$

are

Select one or more:

- ☐ linearly independence.
- ☐ no answer.
- ☐ linearly Dependence.

Question 14

Not yet answered

Marked out of 2

Flag question

Let $T : \mathbb{R}^3 \rightarrow \mathbb{R}^2$ defined by $T \left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} \right) = \begin{bmatrix} x_1 - x_3 \\ x_2^2 \end{bmatrix}$

Which of the following vectors **dose not** belong to the range of T .

Select one or more:

- ☐ $\begin{bmatrix} 1 \\ -2 \end{bmatrix}$
- ☐ $\begin{bmatrix} -4 \\ 0 \end{bmatrix}$
- ☐ $\begin{bmatrix} 3 \\ -3 \end{bmatrix}$
- ☐ $\begin{bmatrix} 0 \\ 0 \end{bmatrix}$
- ☐ $\begin{bmatrix} -2 \\ 1 \end{bmatrix}$

Question 11

Not yet answered

Marked out of 2

Flag question

Let $S = \{1 + x, 1 + x^2, 1 + x^3\}$

Which of the following vectors belong to Span S ?

Select one:

- ☐ a. $x^2 + 3x - 6$
- ☐ b. $x^2 - 3x + 3$
- ☐ c. Non of the mentioned
- ☐ d. $x - x^2$

Question 12

Not yet answered

Marked out of 2

Flag question

If a matrix A has a characteristic polynomial $-t(t + 3)(t - 2)^2$, then the real eigenvalues are

Select one or more:

- ☒ 3
- ☒ 2
- ☒ -3
- ☒ 0
- ☐ -2
- ☐ Not enough information.

Question 11

Not yet answered

Marked out of 2

Flag question

Let $S = \{1 + x, 1 + x^2, 1 + x^3\}$

Which of the following vectors belong to Span S ?

Select one:

- ☐ a. $x^2 + 3x - 6$
- ☐ b. $x^2 - 3x + 3$
- ☐ c. Non of the mentioned
- ☐ d. $x - x^2$

Question 12

Not yet answered

Marked out of 2

Flag question

If a matrix A has a characteristic polynomial $-t(t + 3)(t - 2)^2$, then the real eigenvalues are

Select one or more:

- ☐ 3
- ☐ 2
- ☐ -3
- ☐ 0
- ☐ -2
- ☐ Not enough information.

Question 1
Not yet
answered
Marked out of 1
Flag question

If a set is infinite, it cannot be linearly independent.

Select one:

- ☐ True
☐ False

Question 2
Not yet
answered
Marked out of 1
Flag question

If R is the reduced row echelon form of A then those column vectors of R that contain the leading 1's form a basis for the column space of A .

Select one:

- ☐ True
☐ False

Question 3
Not yet
answered
Marked out of 1
Flag question

Let A be a real 2×2 matrix, whose characteristic polynomial does not have real roots. Then A is diagonalizable.

Select one:

- ☐ True
☐ False

الترتيب

- ☐ a. $\begin{pmatrix} 30 \\ -1 \end{pmatrix}$
☐ b. $\begin{pmatrix} -1 \\ 30 \end{pmatrix}$
☐ c. $\begin{pmatrix} 11 \\ 30 \end{pmatrix}$
☐ d. $\begin{pmatrix} 1 \\ 30 \end{pmatrix}$

Question 9
Not yet
answered
Marked out of 1
Flag question

Let A be a lower triangular matrix with all entries on the diagonal distinct. Then there is an eigenbasis for A .

☒ True

☐ False

Question 10
Not yet
answered
Marked out of 1
Flag question

The matrix $A = \begin{pmatrix} 1 & 0 & 1 \\ 1 & 2 & 1 \\ 0 & 3 & 0 \end{pmatrix}$ is not invertible.

☒ True

☐ False

الصفحة 2 من 5

Question 8
Not yet
answered
Marked out of 2
Flag question

The set $B = \{\vec{b}_1, \vec{b}_2\}$ is a basis for $\mathbb{R}^2$. Let $T: \mathbb{R}^2 \rightarrow \mathbb{R}^2$ be a linear transformation such that $T(\vec{b}_1) = \begin{pmatrix} 3 \\ 5 \end{pmatrix}$ and $T(\vec{b}_2) = \begin{pmatrix} -1 \\ 4 \end{pmatrix}$. Find $T(2\vec{b}_1 + 5\vec{b}_2)$.

Select one:

- ☐ a. $\begin{pmatrix} 0 \\ 30 \end{pmatrix}$
☐ b. $\begin{pmatrix} -1 \\ 30 \end{pmatrix}$
☐ c. $\begin{pmatrix} 11 \\ 30 \end{pmatrix}$
☒ d. $\begin{pmatrix} 1 \\ 30 \end{pmatrix}$

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الترتيب

30 /

☐ b. $\begin{pmatrix} -1 \\ 30 \end{pmatrix}$

☐ c. $\begin{pmatrix} 11 \\ 30 \end{pmatrix}$

☐ d. $\begin{pmatrix} 1 \\ 30 \end{pmatrix}$

Question 9
Not yet answered
Marked out of 1
Flag question

Let A be a lower triangular matrix with all entries on the diagonal distinct. Then there is an eigenbasis for A .

Select one:

☐ True

☐ False

Question 10
Not yet answered
Marked out of 1
Flag question

The matrix $A = \begin{pmatrix} 1 & 0 & 1 \\ 1 & 2 & 1 \\ 0 & 3 & 0 \end{pmatrix}$ is not invertible.

Select one:

☐ True

☐ False

الصفحة 2 من 5

Question 19

Not yet answered

Marked out of 1

Flag question

If V is a set that contains the 0-vector, and such that whenever $\vec{u}$ and $\vec{v}$ are in V , then $\vec{u} + \vec{v}$ is in V , then V is a vector space !

Select one:

- ☐ a. True
- ☐ b. False

Question 20

Not yet answered

Marked out of 2

Flag question

Let $T : \mathbb{R}^3 \rightarrow \mathbb{R}^2$ defined by $T \left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} \right) = \begin{bmatrix} x_1 - x_3 \\ x_2^2 \end{bmatrix}$

Which of the following vectors **dose not** belong to the range of T .

Select one or more:

- ☐ $\begin{bmatrix} 1 \\ -2 \end{bmatrix}$
- ☐ $\begin{bmatrix} -4 \\ 0 \end{bmatrix}$
- ☐ $\begin{bmatrix} -2 \\ 1 \end{bmatrix}$
- ☐ $\begin{bmatrix} 3 \\ -3 \end{bmatrix}$
- ☐ $\begin{bmatrix} 0 \\ 0 \end{bmatrix}$

Question 6

Not yet
answered

Marked out of 1

Flag question

$\mathbb{R}_2$ is a subspace of $\mathbb{R}_3$

Select one:

- ☐ a. True
☐ b. False

Question 7

Not yet
answered

Marked out of 1

Flag question

The system $Ax = b$ is inconsistent if and only if b is not in the column space of A .

Select one:

- ☒ True
☐ False

Question 6

Not yet
answered

Marked out of 1

Flag question

$\mathbb{R}_2$ is a subspace of $\mathbb{R}_3$

Select one:

- ☐ a. True
☒ b. False

Question 7

Not yet
answered

Marked out of 1

Flag question

The system $Ax = b$ is inconsistent if and only if b is not in the column space of A .

Select one:

- ☐ True
☐ False

Question **16**

Not yet answered

Marked out of 1

🚩 Flag question

Two $n \times n$ matrices A and B are inverses of one another if and only if $AB = BA = 0$.

Select one:

- ☐ True
- ☐ False

Question **17**

Not yet answered

Marked out of 2

🚩 Flag question

Assuming that A, B, C and D are invertible from the same size $n \times n$. What is the simplification of the expression

$$B(AB)^{-1}(AC^{-1})(D^{-1}C^{-1})^{-1}D^{-1}$$

Select one:

- ☐ a. AC^{-1}
- ☐ b. B
- ☐ c. I_n
- ☐ d. Non of the mentioned.
- ☐ e. $D^{-1}C$

Question **18**

Not yet answered

Marked out of 1

🚩 Flag question

If every finite subset of S is linearly independent, then S is linearly independent.

Select one:

- ☐ True
- ☐ False

Question **14**

Not yet answered

Marked out of 1

🚩 Flag question

Let A be an $n \times n$ matrix with eigenvalues $\lambda_1, \dots, \lambda_n$ (repeated according to algebraic multiplicity). Then $\det(A) = \lambda_1 + \dots + \lambda_n$.

Select one:

☐ True

☐ False

Question **15**

Not yet answered

Marked out of 1

🚩 Flag question

There exists a linear transformation T from $\mathbb{R}^3$ to $\mathbb{R}^2$ such that the kernel of T is two-dimensional.

Select one:

☐ a. True

☐ b. False

Question 1

Not yet answered

Marked out of 1

Flag question

Every vector space has a unique basis.

Select one:

- ☐ True
- ☐ False

Question 2

Not yet answered

Marked out of 2

Flag question

Assuming that A, B, C and D are invertible from the same size $n \times n$. What is the simplification of the expression $(BA^{-1})(AB^{-1})(D^{-1}C^{-1})^{-1}D^{-1}B^{-1}$

Select one:

- ☐ a. I_n
- ☐ b. CB^{-1}
- ☐ c. $D^{-1}C$
- ☐ d. Non of the mentioned.
- ☐ e. AC^{-1}

Question 3

Not yet answered

Marked out of 1

Flag question

If H is a subspace of $\mathbb{R}^4$, then there is a 4×4 non-zero matrix such that $\text{Null}A = H$

Select one:

- ☐ True
- ☐ False

Question 11

Not yet answered

Marked out of 1

Flag question

If A has size $n \times n$ and $I_n, A, A^2, A^2, \dots, A^{n^2}$ are distinct matrices, then $\{I_n, A, A^2, A^2, \dots, A^{n^2}\}$ is a linearly dependent set.

Select one:

☐ True

☐ False

Question 12

Not yet answered

Marked out of 2

Flag question

The set $\mathcal{B} = \{\vec{b}_1, \vec{b}_2\}$ is a basis for $\mathbb{R}^2$. Let $T : \mathbb{R}^2 \rightarrow \mathbb{R}^2$ be a linear transformation such that $T(\vec{b}_1) = \begin{pmatrix} 3 \\ 5 \end{pmatrix}$ and $T(\vec{b}_2) = \begin{pmatrix} -1 \\ 4 \end{pmatrix}$. Find $T(2\vec{b}_1 + 5\vec{b}_2)$.

Select one:

☐ a. $\begin{pmatrix} 0 \\ 30 \end{pmatrix}$

☐ b. $\begin{pmatrix} -1 \\ 30 \end{pmatrix}$

☐ c. $\begin{pmatrix} 11 \\ 30 \end{pmatrix}$

☐ d. $\begin{pmatrix} 1 \\ 30 \end{pmatrix}$

Question 13

Not yet answered

Marked out of 1

Flag question

If H is a subspace of $\mathbb{R}^4$, then there is a 4×4 matrix such that $\text{Row } A = H$.

Select one:

☐ True

☐ False

Question 9

Not yet answered

Marked out of 1

Flag question

If A is 3×3 matrix and $\det(A - \lambda I_3) = (1 - \lambda)^2(\lambda + 3)$, and the eigenspace of $\lambda = 1$ is $E = \text{span}\left\{\begin{bmatrix} 1 \\ 2 \\ 4 \end{bmatrix}\right\}$, then it is possible that A is diagonalizable.

Select one:

☐ True

☒ False

Question 10

Not yet answered

Marked out of 2

Flag question

If a matrix A has a characteristic polynomial $t(t + 2)(t^2 - 6t + 16)$, then the real eigenvalues are

Select one or more:

☐ 0

☐ -2

☐ Not enough information.

☐ 6

☐ -8

☐ 8

Question 8

Not yet answered

Marked out of 2

Flag question

Let $T : \mathbb{R}^3 \rightarrow \mathbb{R}^3$ linear transformation defined by $T \left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} \right) = \begin{bmatrix} x_1 - x_2 + x_3 \\ 2x_2 + 3x_3 \\ 3x_2 + 2x_3 \end{bmatrix}$ then the standard matrix is

Select one:

- ☐ a. $\begin{bmatrix} 1 & -1 & 0 \\ 2 & 3 & 0 \\ 0 & 2 & 3 \end{bmatrix}$
- ☐ b. $\begin{bmatrix} 1 & -1 & 1 \\ 0 & 2 & 3 \\ 0 & 3 & 2 \end{bmatrix}$
- ☐ c. $\begin{bmatrix} 1 & -1 & 0 \\ 0 & 2 & 3 \\ 2 & 0 & 3 \end{bmatrix}$
- ☐ d. $\begin{bmatrix} 1 & -2 & 1 \\ 0 & 3 & 2 \\ 0 & 2 & 3 \end{bmatrix}$
- ☐ e. $\begin{bmatrix} 1 & -1 & 1 \\ 2 & 3 & 0 \\ 2 & 3 & 0 \end{bmatrix}$

Question 9

Not yet answered

Marked out of 1

Flag question

If A is 3×3 matrix and $\det(A - \lambda I_3) = (1 - \lambda)^2(\lambda + 3)$, and the eigenspace of $\lambda = 1$ is $E = \text{span} \left\{ \begin{bmatrix} 1 \\ 2 \\ 4 \end{bmatrix} \right\}$, then it is possible that A is diagonalizable.

Select one:

- ☐ True
- ☐ False

Question **6**

Not yet answered

Marked out of 1

🚩 Flag question

If $\vec{u}$ and $\vec{v}$ are nonzero vectors in $\mathbb{R}^n$, then $\text{Span}\{\vec{u}, \vec{v}\}$ contains the line passing through $\vec{u}$ and the origin.

Select one:

- ☐ a. True
- ☐ b. False

Question **7**

Not yet answered

Marked out of 2

🚩 Flag question

Let $S = \{1 + x, x^2 + x^3, 1 + x^3\}$

Which of the following vectors belong to Span S ?

Select one:

- ☐ a. $x^2 - 3x + 1$
- ☐ b. $x^2 + 3x - 1$
- ☐ c. $2x^3 + x^2 - x$
- ☐ d. Non of the mentioned

Let $Ax = b$ be a linear system such that the size of A is 5×9 and $\text{Rank}(A) = 2$ and $\text{Rank}[A|b] = 2$ then:

Select one:

- ☐ a. dimension of the column space of A is 2.
- ☐ b. dimension of the null space of A is 3.
- ☐ c. Non of the answers.
- ☐ d. dimension of the row space of A is 5.
- ☐ e. dimension of the null space of A^T is 7.

If H is a subspace of $\mathbb{R}^4$, then there is a 4×4 non-zero matrix such that $\text{Null}A = H$.

Select one:

- ☐ True
- ☐ False

If $T \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} x \\ 0 \end{pmatrix}$, then $\text{Null}(T) = \text{Span} \left\{ \begin{pmatrix} x \\ 0 \end{pmatrix} \right\}$.

Select one:

- ☐ a. True
- ☐ b. False

Every vector space has a unique basis.

Select one:

- ☐ True
- ☐ False

Assuming that A , B , C and D are invertible from the same size $n \times n$. What is the simplification of the expression

$$(BA^{-1})(AB^{-1})(D^{-1}C^{-1})^{-1}D^{-1}B^{-1}$$

Select one:

- ☐ a. I_n
- ☐ b. CB^{-1}
- ☐ c. $D^{-1}C$
- ☐ d. Non of the mentioned.
- ☐ e. AC^{-1}

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Every vector space has a unique basis.

Select one:

- ☐ True
- ☐ False

Assuming that A, B, C and D are invertible from the same size $n \times n$. What is the simplification of the expression

$$(BA^{-1})(AB^{-1})(D^{-1}C^{-1})^{-1}D^{-1}B^{-1}$$

Select one:

- ☐ a. I_n
- ☐ b. CB^{-1}
- ☐ c. $D^{-1}C$
- ☐ d. Non of the mentioned.
- ☐ e. AC^{-1}

If H is a subspace of $\mathbb{R}^4$, then there is a 4×4 non-zero matrix such that $\text{Null } A = H$.

Select one:

- ☐ True
- ☐ False

If $T \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} x \\ 0 \end{pmatrix}$, then $\text{Null}(T) = \text{Span} \left\{ \begin{pmatrix} x \\ 0 \end{pmatrix} \right\}$.

Select one:

- ☐ a. True
- ☐ b. False

Let $Ax = b$ be a linear system such that the size of A is 5×9 and $\text{Rank}(A) = 2$ and $\text{Rank}[A|b] = 2$ then:

Select one:

- ☐ a. dimension of the column space of A is 2.
- ☐ b. dimension of the null space of A is 3.
- ☐ c. Non of the answers.
- ☐ d. dimension of the row space of A is 5.
- ☐ e. dimension of the null space of A^T is 7.

Question 4

Not yet answered

Marked out of 2

Flag question

The following vectors

$$\begin{bmatrix} 2 \\ 0 \\ 7 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 0 \\ 0 \\ 2 \\ 0 \\ 7 \end{bmatrix}$$

are

Select one or more:

- ☐ no answer.
- ☐ linearly Dependence.
- ☐ linearly independence.

Question 5

Not yet answered

Marked out of 2

Flag question

Let $Ax = b$ be a linear system such that the size of A is 5×9 and $\text{Rank}(A) = 2$ and $\text{Rank}[A|b] = 2$ then:

Select one:

- ☐ a. Non of the answers.
- ☐ b. dimension of the null space of A is 7.
- ☐ c. dimension of the column space of A is 3.
- ☐ d. dimension of the null space of A^T is 4.
- ☐ e. dimension of the row space of A is 5.



Question 1

Not yet answered

Marked out of 2

Flag question

Let $S = \{1 - x^2, x, x^3\}$

Which of the following vectors belong to Span S ?

Select one:

- ☐ a. Non of the mentioned
- ☐ b. $-4 + 2x + 4x^2 + 3x^3$
- ☐ c. $3 - x + 3x^2 + x^3$
- ☐ d. $3 - x + 2x^2 - x^3$

Question 2

Not yet answered

Marked out of 1

Flag question

For any linearly independent vectors $\mathbf{v}_1, \dots, \mathbf{v}_k$ in a vector space V , the set $\{\mathbf{v}_1, \dots, \mathbf{v}_k\}$ form a basis for a subspace of V .

Select one:

- ☐ True
- ☐ False

Question 3

Not yet answered

Marked out of 1

Flag question

If E is an $m \times m$ elementary matrix and A is an $m \times n$ matrix then the null space of EA is the same as the null space of A .

Select one:

- ☐ True
- ☐ False

Question 4

Not yet answered

Marked out of 2

Flag question

The following vectors

If we have 4×4 matrices with the following characteristic polynomials. Which of them can be diagonalizable

Select one:

- ☒ a. $(t^2 - 8)(t^2 - 1)$
- ☐ b. $(t^2 + 1)^2$
- ☐ c. $(t - 1)^2(t - 3)(t^2 + 1)$
- ☐ d. $(t^4 + 4)$
- ☐ e. Non of the mentioned

Question 20

Not yet answered

Marked out of 1

Flag question

Distinct eigenvectors are linearly independent.

Select one:

- ☐ True
- ☐ False

Question 18

Not yet answered

Marked out of 2

Flag question

If we have 4×4 matrices with the following characteristic polynomials. Which of them can be diagonalizable

Select one:

- ☐ a. $(t^2 - 8)(t^2 - 1)$
- ☐ b. $(t^2 + 1)^2$
- ☐ c. $(t - 1)^2(t - 3)(t^2 + 1)$
- ☐ d. $(t^4 + 4)$
- ☐ e. Non of the mentioned

Question 19

Not yet answered

Marked out of 1

Flag question

Let A be an $m \times n$ matrix, and assume $m > n$. Additionally, assume that the matrix A has n pivots. Then for any vector $\vec{b} \in \mathbb{R}^m$, the equation $A\vec{x} = \vec{b}$ is consistent.

Select one:

- ☐ a. False
- ☐ b. True

Question 16

Not yet answered

Marked out of 2

Flag question

$T : \mathbb{R}^4 \rightarrow \mathbb{R}^3$ is a linear transformation such that $T(\vec{v}) = A\vec{v}$, where A is:

$$A = \begin{pmatrix} 1 & 3 & -2 & 2 \\ 0 & 0 & 4 & 3 \\ 0 & 0 & 0 & -5 \end{pmatrix}$$

What is the dimension of the kernel of T i.e., $\dim(\ker(T))$?

Select one:

- ☐ a. 0
- ☐ b. 1
- ☐ c. 2
- ☐ d. 3

Question 17

Not yet answered

Marked out of 2

Flag question

Suppose that A, B, C, D and E are matrices with the following sizes:

$A_{4 \times 5}, B_{4 \times 5}, C_{5 \times 2}, D_{4 \times 2}, E_{5 \times 4}$. Which of the following matrix expression is defined.

Select one or more:

- ☐ $E(5B + A)$
- ☐ $AC + D$
- ☐ $B^T D + ED$
- ☐ $BA^T + D$
- ☐ $B^T D + ED$

Question 11

Not yet answered

Marked out of 2

Flag question

Which of the following are subspaces of the indicated vector space:

$$W = \left\{ \begin{bmatrix} u_1 \\ u_2 \\ u_3 \end{bmatrix} \in \mathbb{R}^3 : u_1 \geq u_2 \geq u_3 \right\}$$

$$U = \left\{ \mathbf{x} \in \mathbb{R}^2 \mid A\mathbf{x} = \begin{bmatrix} 2 \\ 0 \end{bmatrix} \right\}, \text{ and } A \text{ is a } 2 \times 2 \text{ matrix,}$$

Select one:

- ☐ a. Only U is a subspace
- ☒ b. Neither W nor U are subspaces
- ☐ c. Both W and U are subspaces
- ☐ d. Only W is a subspace

Question 12

Not yet answered

Marked out of 2

Flag question

Find the domain and codomain of the transformation defined by the standard matrix $A =$

$$\begin{bmatrix} 3 & 1 \\ 6 & 7 \\ 2 & 3 \\ 5 & 1 \end{bmatrix}$$

Quiz navigation



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19	20							

Finish attempt ...

Time left 0:19:05

Question 18

Not yet answered

Marked out of 1

Flag question

If $A = \begin{pmatrix} 1 & 0 \\ -1 & 1 \end{pmatrix}$ then the linear transformation T_A is one to one .

Select one:

- ☐ True
☐ False

Question 19

Not yet answered

Marked out of 1

Flag question

In $\mathcal{P}$, the set $\{x, x^3, x^5, \dots\}$ is linearly dependent.

Select one:

- ☐ True
☐ False

Question 20

Not yet answered

Marked out of 1

Flag question

Distinct eigenvectors are linearly independent.

Select one:

- ☐ True
☐ False

Which of the following are subspaces of the indicated vector space:

$$W = \left\{ \begin{bmatrix} u_1 \\ u_2 \\ u_3 \end{bmatrix} \in \mathcal{R}^3 : -u_1 + 7u_2 + 2u_3 = 0 \right\}$$
$$U = \left\{ \begin{bmatrix} u_1 \\ u_2 \\ u_3 \end{bmatrix} \in \mathcal{R}^3 : u_1 = u_2 \right\}$$

Select one:

- ☐ a. Neither W nor U are subspaces
☐ b. Only U is a subspace
☒ c. Both W and U are subspaces
☐ d. Only W is a subspace

Question 16

Not yet
answered

Marked out of 2

Flag question

Let

$$A = \begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 5 \\ 7 & 8 & -3 \end{pmatrix}$$

Find the cofactor C_{32} of A .

Select one:

- ☐ a. -6
- ☐ b. 0
- ☐ c. 7
- ☐ d. 6

Question 17

Not yet
answered

Marked out of 2

Flag question

Suppose that A, B, C, D and E are matrices with the following sizes: $A_{4 \times 5}, B_{4 \times 5}, C_{5 \times 2}, D_{4 \times 2}, E_{5 \times 4}$. Which of the following matrix expression is defined.

Select one or more:

- ☐ $A - 3E^T$
- ☐ $B^T D + ED$
- ☐ $BA + DC$
- ☐ $BA^T + D$
- ☐ $AC + D$

Question 19

Not yet
answered

Marked out of 1

Flag question

If A is 3×3 matrix and $\det(A - \lambda I_3) = (1 - \lambda)^2(\lambda + 3)$, and the eigenspace of $\lambda = 1$ is
$$E = \text{span}\left\{ \begin{bmatrix} 1 \\ 2 \\ 4 \end{bmatrix} \right\},$$
 then it is possible that A is diagonalizable.

Select one:

- ☐ True
- ☐ False

Question 20

Not yet
answered

Marked out of 1

Flag question

In $\mathcal{P}$, the set $\{x, x^3, x^5, \dots\}$ is linearly dependent.

Select one:

- ☐ True
- ☐ False

Question 17

Not yet answered

Marked out of 1

Flag question

If A is an invertible square matrix, then $(A^T)^{-1} = (A^{-1})^T$.

Select one:

- ☐ a. True
- ☐ b. False

Question 18

Not yet answered

Marked out of 2

Flag question

Which of the following are subspaces of the indicated vector space:

$$W = \left\{ \begin{bmatrix} u_1 \\ u_2 \\ u_3 \end{bmatrix} \in \mathcal{R}^3 : 2u_1 + 5u_2 - 4u_3 = 0 \right\}$$
$$U = \left\{ \begin{bmatrix} u_1 \\ u_2 \end{bmatrix} \in \mathcal{R}^2 : u_1 = u_2 \right\}$$

Select one:

- ☐ a. Both W and U are subspaces
- ☐ b. Neither W nor U are subspaces
- ☐ c. Only U is a subspace
- ☐ d. Only W is a subspace

12:54

18.5 KB/s



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Question 16

Not yet answered

Marked out of 2

Flag question

$$\text{Let } A = \begin{bmatrix} 3 & 0 \\ 0 & -2 \\ 2 & 0 \end{bmatrix}.$$

What is the eigenvalues of $A^T A$?

Select one:

- ☐ a. $\lambda = -13, \lambda = -4$
- ☐ b. $\lambda = 10$ and $\lambda = 4$
- ☐ c. Non of the mentioned
- ☐ d. $\lambda = 13$ and $\lambda = 4$
- ☐ e. $\lambda = 2$ and $\lambda = 10$

If A and B are invertible 2×2 matrices, then $(AB)^{-1} = A^{-1}B^{-1}$

Select one:

- ☐ a. False
- ☐ b. True

Question 13

Not yet answered

Marked out of 2

Flag question

Which of the following are subspaces of the indicated vector space:

$$W = \left\{ \begin{bmatrix} u_1 \\ u_2 \\ u_3 \end{bmatrix} \in \mathcal{R}^3 : -u_1 + 7u_2 + 2u_3 = 0 \right\}$$
$$U = \left\{ \begin{bmatrix} u_1 \\ u_2 \\ u_3 \end{bmatrix} \in \mathcal{R}^3 : u_1 = u_2 \right\}$$

Select one:

- ☐ a. Neither W nor U are subspaces
- ☐ b. Only U is a subspace
- ☐ c. Both W and U are subspaces
- ☐ d. Only W is a subspace

Question 14

Not yet answered

Marked out of 2

Flag question

Which of the following are linear combinations of $u = (0, -2, 2)$ and $v = (1, 3, -1)$.

Select one:

- ☐ a. $(1, 5, -3)$
- ☐ b. $(0, 4, 5)$
- ☐ c. $(-1, -5, 0)$
- ☐ d. $(3, 7, -3)$
- ☐ e. Non of the mentioned.

Question 11

Not yet answered

Marked out of 2

Flag question

Which of the following are subspaces of the indicated vector space:

$$W = \left\{ \begin{bmatrix} u_1 \\ u_2 \\ u_3 \end{bmatrix} \in \mathbb{R}^3 : u_1 \geq u_2 \geq u_3 \right\}$$

$$U = \left\{ \mathbf{x} \in \mathbb{R}^2 \mid A\mathbf{x} = \begin{bmatrix} 2 \\ 0 \end{bmatrix} \right\}, \text{ and } A \text{ is a } 2 \times 2 \text{ matrix,}$$

Select one:

- ☐ a. Only U is a subspace
- ☐ b. Neither W nor U are subspaces
- ☐ c. Both W and U are subspaces
- ☐ d. Only W is a subspace

Question 12

Not yet answered

Marked out of 2

Flag question

Find the domain and codomain of the transformation defined by the standard matrix $A =$

$$\begin{bmatrix} 3 & 1 \\ 6 & 7 \\ 2 & 3 \\ 5 & 1 \end{bmatrix}$$

Select one:

- ☐ a. domain= $\mathbb{R}^3$, codomain= $\mathbb{R}^2$.
- ☐ b. Non of the mentioned.
- ☐ c. domain= $\mathbb{R}^4$, codomain= $\mathbb{R}^2$.
- ☐ d. domain= $\mathbb{R}^2$, codomain= $\mathbb{R}^4$.
- ☐ e. domain= $\mathbb{R}^2$, codomain= $\mathbb{R}^2$.

Question 16

Not yet
answered

Marked out of 2

Flag question

$$\text{Let } A = \begin{bmatrix} 3 & 0 \\ 0 & -2 \\ 2 & 0 \end{bmatrix}.$$

What is the eigenvalues of $A^T A$?

Select one:

- ☐ a. $\lambda = -13, \lambda = -4$
- ☐ b. $\lambda = 10$ and $\lambda = 4$
- ☐ c. Non of the mentioned
- ☐ d. $\lambda = 13$ and $\lambda = 4$
- ☐ e. $\lambda = 2$ and $\lambda = 10$

Question 17

Not yet
answered

Marked out of 1

Flag question

If A is an invertible square matrix, then $(A^T)^{-1} = (A^{-1})^T$.

Select one:

- ☐ a. True
- ☐ b. False

Question 18

Not yet
answered

Marked out of 2

Flag question

Which of the following are subspaces of the indicated vector space:

$$W = \left\{ \begin{bmatrix} u_1 \\ u_2 \\ u_3 \end{bmatrix} \in \mathcal{R}^3 : 2u_1 + 5u_2 - 4u_3 = 0 \right\}$$

$$U = \left\{ \begin{bmatrix} u_1 \\ u_2 \end{bmatrix} \in \mathcal{R}^2 : u_1 = u_2 \right\}$$

Select one:

- ☐ a. Both W and U are subspaces
- ☐ b. Neither W nor U are subspaces
- ☐ c. Only U is a subspace
- ☐ d. Only W is a subspace

Question 19

Not yet
answered

Marked out of 1

Flag question

If A is 3×3 matrix and $\det(A - \lambda I_3) = (1 - \lambda)^2(\lambda + 3)$, and the eigenspace of $\lambda = 1$ is

$$E = \text{span} \left\{ \begin{bmatrix} 1 \\ 2 \\ 4 \end{bmatrix} \right\}, \text{ then it is possible that } A \text{ is diagonalizable.}$$

Select one:

- ☐ True
- ☐ False

Question 20

Not yet
answered

Marked out of 1

Flag question

In $\mathcal{P}$, the set $\{x, x^3, x^5, \dots\}$ is linearly dependent.

Select one:

- ☐ True
- ☐ False

Question 15

Not yet answered

Marked out of 1

Flag question

If a matrix is in reduced row echelon form, then it is also in row echelon form.

Select one:

- ☐ True
- ☐ False

Question 13

Not yet answered

Marked out of 1

Flag question

If P and D are $n \times n$ matrices, then $\det(PDP^{-1}) = \det(D)$

Select one:

- ☐ a. False
- ☐ b. True

Question 14

Not yet answered

Marked out of 2

Flag question

Which of the following are subspaces of the indicated vector space:

$$W = \left\{ \begin{bmatrix} u_1 \\ u_2 \\ u_3 \end{bmatrix} \in \mathcal{R}^3 : -u_1 + 7u_2 + 2u_3 = 0 \right\}$$

$$U = \left\{ \begin{bmatrix} u_1 \\ u_2 \end{bmatrix} \in \mathcal{R}^2 : 2u_1^2 + 3u_2^2 = 12 \right\}$$

Select one:

- ☐ a. Neither W nor U are subspaces
- ☐ b. Only W is a subspace
- ☐ c. Both W and U are subspaces
- ☐ d. Only U is a subspace

Question 11

Not yet answered

Marked out of 1

Flag question

If A is an invertible 3×3 matrix, then its rows form a basis of $\mathbb{R}^3$.

Select one:

- ☐ a. True
- ☐ b. False

Question 12

Not yet answered

Marked out of 2

Flag question

The linear transformation $T : \mathbb{R}^5 \rightarrow \mathbb{R}^4$ is defined by $T(\vec{x}) = A\vec{x}$ for some matrix A . If $\text{rank}(T) = 3$, what is the dimension of $\ker(T)$?

Select one:

- ☐ a. 4
- ☐ b. 3
- ☐ c. 5
- ☐ d. 2

Question 9

Not yet
answered

Marked out of 2

🚩 Flag
question

Let $A = \begin{bmatrix} 0 & -1 \\ 1 & 0 \\ 1 & -1 \end{bmatrix}$.

What is the eigenvalues of $A^T A$?

Select one:

- ☐ a. $\lambda = 1$ and $\lambda = 4$
- ☐ b. $\lambda = -3$ and $\lambda = -1$
- ☐ c. $\lambda = 2$ and $\lambda = 0$
- ☐ d. Non of the mentioned
- ☐ e. $\lambda = -1$, $\lambda = 2$ and $\lambda = 3$

Question 10

Not yet
answered

Marked out of 1

🚩 Flag
question

If a matrix is in reduced row echelon form, then it is also in row echelon form.

Select one:

- ☐ True
- ☐ False

Question 6

Not yet answered

Marked out of 1

Flag question

The set of polynomials of degree less than or equal to 3 such that $p(2) = 1$ is a vector space.

Select one:

- ☐ True
☐ False

Question 7

Not yet answered

Marked out of 1

Flag question

A set containing a single vector is linearly independent.

Select one:

- ☐ True
☐ False

Question 8

Not yet answered

Marked out of 1

Flag question

Symmetric matrices are always diagonalizable.

Select one:

- ☐ True
☐ False

Question 8

Not yet answered

Marked out of 2

Flag question

Which of the following is in $\text{span}\{(0, -2, 2), (1, 3, -1)\}$.

Select one:

- ☐ a. $(-1, -5, 0)$
☐ b. $(0, 4, 5)$
☐ c. $(3, 7, -3)$
☐ d. Non of the mentioned.
☒ e. $(1, 5, -3)$

Question 9

Not yet answered

Marked out of 2

Flag question

If we have 4×4 matrices with the following characteristic polynomials. Which of them can be diagonalizable

Select one:

- ☐ a. $(t^2 + 1)^2$
☐ b. $(t^2 + 2)(t^2 + 4)$
☐ c. Non of the mentioned
☐ d. $(t - 1)(t^2 + 2)(t - 4)$
☒ e. $(t - 1)^2(t^2 - 9)$

Question 5

Not yet
answered

Marked out of 1

Flag
question

The following set is a basis for $\mathbb{P}_2$: $\{1, 1+t, 1+t+t^2\}$.

Select one:

- ☐ a. True
- ☐ b. False

Question 3

Not yet
answered

Marked out of 1

Flag
question

There is only one matrix transformation $T: \mathbb{R}^n \rightarrow \mathbb{R}^m$ such that $T(-x) = -T(x)$ for every vector x in $\mathbb{R}^n$.

Select one:

- ☐ True
- ☐ False

Question 4

Not yet
answered

Marked out of 1

Flag
question

If $A = \begin{pmatrix} -1 & 4 \\ 1 & -4 \end{pmatrix}$ then the linear transformation T_A is one to one .

Select one:

- ☐ True
- ☐ False

Question 1

Not yet answered

Marked out of 2

Flag question

If A is a 4×4 matrix, and $|A| = 10$, then the value of $|2A|$ is equal to:

Select one:

- ☐ a. $10 + 10 = 20$
- ☒ b. $16 * 10 = 160$
- ☐ c. $10^2 = 100$
- ☐ d. $2 * 10 = 20$

Question 2

Not yet answered

Marked out of 2

Flag question

Let $\mathcal{B} = \{\vec{b}_1, \vec{b}_2, \vec{b}_3\}$ be a basis for $\mathbb{R}^3$, where

$$\vec{b}_1 = \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}, \vec{b}_2 = \begin{pmatrix} 0 \\ \frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} \end{pmatrix}, \vec{b}_3 = \begin{pmatrix} 0 \\ -\frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} \end{pmatrix} \text{ and consider the vector } \vec{v} = \begin{pmatrix} 1 \\ 1 \\ 2 \end{pmatrix}.$$

Then the second coordinate of $[\vec{v}]_{\mathcal{B}}$ is given by:

Select one:

- ☐ a. $\frac{3}{2}$
- ☐ b. $\frac{3}{\sqrt{2}}$
- ☐ c. $-\sqrt{2}$
- ☐ d. $-\frac{3}{\sqrt{2}}$

Question 10

Not yet answered

Marked out of 1

Flag question

If $\setminus(A)$ has a pivot position in every column, then its columns are linearly independent

Select one:

- ☐ a. True
- ☐ b. False

Question 8

Not yet answered

Marked out of 2

Flag question

Which of the following is in $\text{span}\{(0,-2,2),(1,3,-1)\}$.

Select one:

- ☐ a. $(-1,-5,0)$
- ☐ b. $(0,4,5)$
- ☐ c. $(3,7,-3)$
- ☐ d. Non of the mentioned.
- ☐ e. $(1,5,-3)$

Question 9

Not yet answered

Marked out of 2

Flag question

If we have (4×4) matrices with the following characteristic polynomials. Which of them can be diagonalizable

Select one:

- ☐ a. $(t^2+1)^2$
- ☐ b. $(t^2+2)(t^2+4)$
- ☐ c. Non of the mentioned
- ☐ d. $(t-1)(t^2+2)(t-4)$
- ☐ e. $(t-1)^2(t^2-9)$

Question 6

Not yet answered

Marked out of 2

Flag question

Find the domain and codomain of the transformation defined by the standard matrix $A =$

$$\begin{bmatrix} 3 & 1 & 2 \\ 6 & 7 & 1 \\ 1 & 8 & 2 \\ 5 & 1 & 0 \end{bmatrix}$$

Select one:

- ☐ a. Non of the mentioned.
- ☐ b. $\text{domain} = \mathbb{R}^4 \mathbb{R}^4$
- ☐ c. $\text{domain} = \mathbb{R}^4 \mathbb{R}^3$
- ☐ d. $\text{domain} = \mathbb{R}^3 \mathbb{R}^3$
- ☐ e. $\text{domain} = (\mathbb{R}^3)$, $\text{codomain} = (\mathbb{R}^4)$.

Question 7

Not yet answered

Marked out of 1

Flag question

Symmetric matrices are always diagonalizable.

Select one:

- ☐ True
- ☐ False

Question 4

Not yet answered

Marked out of 1

Flag question

$T : \mathbb{R}^4 \rightarrow \mathbb{R}^3$ is a linear transformation such that $T(\vec{v}) = A\vec{v}$, where A is:

$$A = \begin{pmatrix} 1 & 3 & -2 & 2 \\ 0 & 0 & 4 & 3 \\ 0 & 0 & 0 & -5 \end{pmatrix}$$

Then T is a one-to-one transformation?

Select one:

- ☐ a. False
- ☐ b. True

Question 5

Not yet answered

Marked out of 2

Flag question

Let $A = \begin{bmatrix} 2 & 0 \\ 0 & 2 \\ 2 & 0 \end{bmatrix}$.

What is the eigenvalues of $A^T A$?

Select one:

- ☐ a. $\lambda = 3$ and $\lambda = 8$
- ☐ b. $\lambda = 4$ and $\lambda = 5$
- ☐ c. $\lambda = 8$ and $\lambda = 4$
- ☐ d. $\lambda = -4$ and $\lambda = -8$
- ☐ e. Non of the mentioned

Question 1

Not yet answered

Marked out of 2

Flag question

Let $\mathcal{B} = \{\vec{b}_1, \vec{b}_2, \vec{b}_3\}$ be a basis for $\mathbb{R}^3$, where

$$\vec{b}_1 = \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}, \vec{b}_2 = \begin{pmatrix} 0 \\ \frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} \end{pmatrix}, \vec{b}_3 = \begin{pmatrix} 0 \\ -\frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} \end{pmatrix} \text{ and consider the vector } \vec{v} = \begin{pmatrix} 1 \\ 1 \\ 2 \end{pmatrix}.$$

Then the second coordinate of $[\vec{v}]_{\mathcal{B}}$ is given by:

Select one:

- ☐ a. $-\sqrt{2}$
- ☐ b. $\frac{3}{\sqrt{2}}$
- ☐ c. $\frac{3}{2}$
- ☐ d. $-\frac{3}{\sqrt{2}}$

Question 8

Not yet answered

Marked out of 2

Flag question

If we have 4×4 matrices with the following characteristic polynomials. Which of them can be diagonalizable

Select one:

- ☐ a. $(t^2 + 2)(t^2 + 4)$
- ☐ b. $(t - 1)^2(t^2 + 2)$
- ☐ c. $(t^2 + 1)^2$
- ☐ d. $(t - 1)^2(t + 2)(t - 4)$
- ☐ e. Non of the mentioned

Question 7

Not yet answered

Marked out of 2

Flag question

Let $\mathcal{B} = \{\vec{b}_1, \vec{b}_2, \vec{b}_3\}$ be a basis for $\mathbb{R}^3$, where

$$\vec{b}_1 = \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}, \vec{b}_2 = \begin{pmatrix} 0 \\ \frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} \end{pmatrix}, \vec{b}_3 = \begin{pmatrix} 0 \\ -\frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} \end{pmatrix}$$

and consider the vector $\vec{v} = \begin{pmatrix} 1 \\ 1 \\ 2 \end{pmatrix}$. Then the second coordinate of $[\vec{v}]_{\mathcal{B}}$ is given by:

Select one:

- ☐ a. $-\frac{3}{\sqrt{2}}$
- ☐ b. $-\sqrt{2}$
- ☐ c. $\frac{3}{\sqrt{2}}$
- ☐ d. $\frac{3}{2}$

Question 2

Not yet answered

Marked out of 2

Flag question

Which of the following are subspaces of the indicated vector space:

$$W = \left\{ \begin{bmatrix} u_1 \\ u_2 \\ u_3 \\ u_4 \end{bmatrix} \in \mathcal{R}^4 : 3u_1u_2^2 + 6u_4 = 0 \text{ and } u_3 = 0 \right\}$$

$$U = \left\{ \begin{bmatrix} u_1 \\ u_2 \\ u_3 \end{bmatrix} \in \mathcal{R}^3 : u_1 - 4u_2 = u_3^2 \right\}$$

Select one:

- ☐ a. Both W and U are subspaces
- ☐ b. Only U is a subspace
- ☐ c. Only W is a subspace
- ☐ d. Neither W nor U are subspaces

Question 3

Not yet answered

Marked out of 1

Flag question

The equation $A\vec{x} = \vec{b}$ is consistent only if the augmented matrix $[A|\vec{b}]$ has a pivot position in each row.

Select one:

- ☐ a. False
- ☐ b. True

Question 20

Not yet answered

Marked out of 1

Flag question

The set $\{1, 1+t, 1+t+t^2\}$ is a basis for P_2 .

Select one:

- ☐ True
- ☐ False

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Question 18

Not yet
answered

Marked out of 2

Flag question

Suppose that A, B, C, D and E are matrices with the following sizes: $A_{4 \times 5}$, $B_{4 \times 5}$, $C_{5 \times 2}$, $D_{4 \times 2}$, $E_{5 \times 4}$. Which of the following matrix expression is defined.

Select one or more:

- ☐ $BA^T + D$
- ☐ $(5B + 3A)^T D$
- ☐ $BA + DC$
- ☐ $B(A^T A - CC^T)$
- ☐ $B^T D + ED$

Question 19

Not yet
answered

Marked out of 2

Flag question

Which of the following are subspaces of the indicated vector space:

$$W = \left\{ \begin{bmatrix} u_1 \\ u_2 \\ u_3 \\ u_4 \end{bmatrix} \in \mathcal{R}^4 : 3u_1 u_2^2 + 6u_4 = 0 \text{ and } u_3 = 0 \right\}$$

$$U = \left\{ \begin{bmatrix} u_1 \\ u_2 \\ u_3 \end{bmatrix} \in \mathcal{R}^3 : u_1 - 4u_2 = u_3^2 \right\}$$

Select one:

- ☐ a. Only W is a subspace
- ☐ b. Neither W nor U are subspaces
- ☐ c. Only U is a subspace
- ☐ d. Both W and U are subspaces

12:33

0.00 KB/s

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Question 6

Not yet answered

Marked out of 1

Flag question

There is at least one linear transformation $T: \mathbb{R}^n \rightarrow \mathbb{R}^m$ for which $T(2x) = 4T(x)$ for some vector x in $\mathbb{R}^n$.

Select one:

- ☐ True
- ☐ False

Question 7

Not yet answered

Marked out of 2

Flag question

Let $\mathcal{B} = \{\vec{b}_1, \vec{b}_2, \vec{b}_3\}$ be a basis for $\mathbb{R}^3$, where

$$\vec{b}_1 = \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}, \vec{b}_2 = \begin{pmatrix} 0 \\ \frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} \end{pmatrix}, \vec{b}_3 = \begin{pmatrix} 0 \\ -\frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} \end{pmatrix} \text{ and consider the vector } \vec{v} = \begin{pmatrix} 1 \\ 1 \\ 2 \end{pmatrix}.$$

Then the second coordinate of $[\vec{v}]_{\mathcal{B}}$ is given by:

Select one:

- ☐ a. $-\frac{3}{\sqrt{2}}$
- ☐ b. $-\sqrt{2}$
- ☐ c. $\frac{3}{\sqrt{2}}$
- ☐ d. $\frac{3}{2}$

Question 8

Not yet answered

Marked out of 2

Flag question

If we have 4×4 matrices with the following characteristic polynomials. Which of them can be diagonalizable

Select one:

- ☐ a. $(t^2 + 2)(t^2 + 4)$
- ☐ b. $(t - 1)^3(t^2 + 2)$
- ☐ c. $(t^2 + 1)^2$
- ☐ d. $(t - 1)^2(t + 2)(t - 4)$
- ☐ e. None of the mentioned

Question 9

Not yet answered

Marked out of 1

Flag question

Given vectors $\{\vec{v}_1, \vec{v}_2\}$ in $\mathbb{R}^2$, these vectors are linearly independent if and only if the parallelogram with two sides given by $\vec{v}_1$ and $\vec{v}_2$ has nonzero area.

Select one:

- ☐ a. True
- ☐ b. False

Question 10

Not yet answered

Marked out of 2

Flag question

Find the domain and codomain of the transformation defined by the standard matrix:

$$A = \begin{bmatrix} 3 & 1 & 2 & 1 \\ 6 & 7 & 1 & 8 \\ 1 & 8 & 2 & 3 \end{bmatrix}$$

Select one:

- ☐ a. domain= $\mathbb{R}^4$, codomain= $\mathbb{R}^4$.
- ☒ b. domain= $\mathbb{R}^4$, codomain= $\mathbb{R}^3$.
- ☐ c. domain= $\mathbb{R}^3$, codomain= $\mathbb{R}^4$.
- ☐ d. domain= $\mathbb{R}^3$, codomain= $\mathbb{R}^3$.
- ☐ e. None of the mentioned.

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Question **16**

Not yet
answered

Marked out of 1

🚩 Flag question

Let A be an $m \times n$ matrix. Then, the homogeneous equation $A\vec{x} = \vec{0}$ is consistent if and only if the augmented matrix $[A|\vec{0}]$ has a pivot in every row.

Select one:

- ☐ a. False
- ☐ b. True

Question **17**

Not yet
answered

Marked out of 2

🚩 Flag question

Which of the following are subspaces of the indicated vector space:

$$W = \left\{ \begin{bmatrix} u_1 \\ u_2 \\ u_3 \end{bmatrix} \in \mathcal{R}^3 : 2u_1 + 5u_2 - 4u_3 = 2 \right\}$$

$$U = \left\{ \begin{bmatrix} u_1 \\ u_2 \end{bmatrix} \in \mathcal{R}^2 : 2u_1 + 3u_2 = 0 \right\}$$

Select one:

- ☐ a. Only U is a subspace
- ☐ b. Both W and U are subspaces
- ☐ c. Only W is a subspace
- ☐ d. Neither W nor U are subspaces

12:30

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جبر خطي

Question 1

Not yet answered

Marked out of 1

Flag question

If $A = \begin{pmatrix} 1 & 1 \\ 3 & 3 \end{pmatrix}$ then the linear transformation T_A is one to one.

Select one:

- ☐ True
- ☒ False

Question 2

Not yet answered

Marked out of 2

Flag question

If A is a 4×4 matrix, and $|A| = 10$, then the value of $|2A|$ is equal to:

Select one:

- ☐ a. $2 \cdot 10 = 20$
- ☐ b. $10^2 = 100$
- ☒ c. $16 \cdot 10 = 160$
- ☐ d. $10 + 10 = 20$

Question 3

Not yet answered

Marked out of 2

Flag question

 $T: \mathbb{R}^4 \rightarrow \mathbb{R}^3$ is a linear transformation such that $T(\vec{v}) = A\vec{v}$, where A is:

$$A = \begin{pmatrix} 1 & 3 & -2 & 2 \\ 0 & 0 & 4 & 3 \\ 0 & 0 & 0 & -5 \end{pmatrix}$$

What is the dimension of the image of T i.e., $\dim(\text{im}(T))$?

Select one:

- ☐ a. 0
- ☐ b. 2
- ☐ c. 1
- ☒ d. 3

Question 4

Not yet answered

Marked out of 1

Flag question

If for some matrix A , and some vectors $\vec{x}, \vec{y}$, we have $A\vec{x} = \vec{y}$, then $\vec{y}$ is a linear combination of the column vectors of A .

Select one:

- ☐ a. False
- ☒ b. True

Question 5

Not yet answered

Marked out of 2

Flag question

Which of the following vectors

$$(i) \begin{pmatrix} 6 \\ 2 \\ 4 \end{pmatrix}, (ii) \begin{pmatrix} 2 \\ -3 \\ 1 \end{pmatrix}$$

is in $\text{Span}\{\vec{u}, \vec{v}\}$ where $\vec{u} = \begin{pmatrix} 3 \\ 1 \\ 2 \end{pmatrix}$, $\vec{v} = \begin{pmatrix} 1 \\ 4 \\ -2 \end{pmatrix}$?

Select one:

- ☐ a. only (i)
- ☒ b. both of them
- ☐ c. none of them
- ☐ d. only (ii)

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Quiz navigation



Which of the following are subspaces of the indicated vector space:

$$W = \left\{ \begin{bmatrix} u_1 \\ u_2 \\ u_3 \end{bmatrix} \in \mathcal{R}^3 : u_1 \geq u_2 \geq u_3 \right\}$$
$$U = \left\{ \mathbf{x} \in \mathcal{R}^2 \mid A\mathbf{x} = \begin{bmatrix} 0 \\ 0 \end{bmatrix} \right\}, \text{ and } A \text{ is a } 2 \times 2 \text{ matrix,}$$

Select one:

- ☐ a. Neither W nor U are subspaces
- ☐ b. Only U is a subspace
- ☐ c. Only W is a subspace
- ☐ d. Both W and U are subspaces

Question 17

Not yet answered

Marked out of 1

Flag question

If the vectors $\vec{u}, \vec{v}, \vec{w}$ are linearly independent, then the vectors $\vec{v}$ and $\vec{w}$ must be linearly independent as well.

Select one:

- ☐ a. False
- ☐ b. True

Question 18

Not yet answered

Marked out of 2

Flag question

Find the domain and codomain of the transformation defined by the standard matrix

$$\begin{bmatrix} 3 & 1 & 6 & 1 & 3 & 4 & -2 \\ 3 & 1 & -2 & 1 & 0 & 6 & -2 \\ 5 & 1 & 0 & 6 & 3 & 2 & -1 \\ 3 & 2 & -4 & 2 & 0 & 0 & 1 \end{bmatrix}$$

Select one:

- ☐ a. domain= $\mathbb{R}^4$, codomain= $\mathbb{R}^7$.
- ☐ b. domain= $\mathbb{R}^7$, codomain= $\mathbb{R}^7$.
- ☐ c. domain= $\mathbb{R}^7$, codomain= $\mathbb{R}^4$.
- ☐ d. domain= $\mathbb{R}^4$, codomain= $\mathbb{R}^4$.
- ☐ e. Non of the mentioned.

12:23

416 KB/s

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جبر خطي

Question 1

Not yet answered

Marked out of 1

Flag question

If $A = \begin{pmatrix} 1 & 1 \\ 3 & 3 \end{pmatrix}$ then the linear transformation T_A is one to one.

Select one:

- ☐ True
- ☐ False

Question 2

Not yet answered

Marked out of 2

Flag question

If A is a 4×4 matrix, and $|A| = 10$, then the value of $|2A|$ is equal to:

Select one:

- ☐ a. $2 + 10 = 20$
- ☐ b. $10^2 = 100$
- ☐ c. $16 * 10 = 160$
- ☐ d. $10 + 10 = 20$

Question 3

Not yet answered

Marked out of 2

Flag question

$T: \mathbb{R}^4 \rightarrow \mathbb{R}^3$ is a linear transformation such that $T(\vec{v}) = A\vec{v}$, where A is:

$$A = \begin{pmatrix} 1 & 3 & -2 & 2 \\ 0 & 0 & 4 & 3 \\ 0 & 0 & 0 & -5 \end{pmatrix}$$

What is the dimension of the image of T i.e., $\dim(\text{im}(T))$?

Select one:

- ☐ a. 0
- ☐ b. 2
- ☐ c. 1
- ☐ d. 3

Question 4

Not yet answered

Marked out of 1

Flag question

If for some matrix A , and some vectors $\vec{x}, \vec{b}$, we have $A\vec{x} = \vec{b}$, then $\vec{b}$ is a linear combination of the column vectors of A .

Select one:

- ☐ a. False
- ☐ b. True

Question 5

Not yet answered

Marked out of 2

Flag question

Which of the following vectors

$$(i) \begin{pmatrix} 6 \\ 2 \\ 4 \end{pmatrix}, (ii) \begin{pmatrix} 2 \\ -3 \\ 1 \end{pmatrix}$$

is in $\text{Span}\{\vec{u}, \vec{v}\}$ where $\vec{u} = \begin{pmatrix} 3 \\ 1 \\ 2 \end{pmatrix}$, $\vec{v} = \begin{pmatrix} 1 \\ 4 \\ -2 \end{pmatrix}$?

Select one:

- ☐ a. only (i)
- ☐ b. both of them
- ☐ c. none of them.
- ☐ d. only (ii)

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Quiz navigation



Question **13**

Not yet
answered

Marked out of 2

Flag question

Let $\mathcal{B} = \{\vec{b}_1, \vec{b}_2, \vec{b}_3\}$ be a basis for $\mathbb{R}^3$, where

$$\vec{b}_1 = \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}, \vec{b}_2 = \begin{pmatrix} 0 \\ \frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} \end{pmatrix}, \vec{b}_3 = \begin{pmatrix} 0 \\ -\frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} \end{pmatrix} \text{ and consider the}$$

vector $\vec{v} = \begin{pmatrix} 1 \\ 1 \\ 2 \end{pmatrix}$. Then the second coordinate of $[\vec{v}]_{\mathcal{B}}$ is given by:

Select one:

- ☐ a. $\frac{3}{\sqrt{2}}$
- ☐ b. $\frac{3}{2}$
- ☐ c. $-\sqrt{2}$
- ☐ d. $-\frac{3}{\sqrt{2}}$

Question **14**

Not yet
answered

Marked out of 2

🚩 Flag question

The linear transformation T is defined by $T(\vec{x}) = A\vec{x}$, where

$$A = \begin{pmatrix} 1 & -2 & 4 & 5 & 0 \\ 0 & 0 & 3 & -1 & 0 \\ 0 & 0 & 0 & 2 & 6 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$$

Assume that the domain of T is $\mathbb{R}^5$ and the codomain is $\mathbb{R}^4$.

What is the dimension of $\ker(T)$?

Select one:

- ☐ a. 1
- ☐ b. 4
- ☐ c. 3
- ☐ d. 2

Question **15**

Not yet
answered

Marked out of 1

🚩 Flag question

If $A = \begin{pmatrix} -1 & 4 \\ 3 & -12 \end{pmatrix}$ then the linear transformation T_A is one to one .

Select one:

- ☐ True
- ☐ False

Question **11**

Not yet
answered

Marked out of 2

🚩 Flag question

If A is a 4×4 matrix, and $|A| = 10$, then the value of $|2A|$ is equal to:

Select one:

- ☐ a. $10^2 = 100$
- ☐ b. $16 * 10 = 160$
- ☐ c. $10 + 10 = 20$
- ☐ d. $2 * 10 = 20$

Question **12**

Not yet
answered

Marked out of 1

🚩 Flag question

If the vectors $\vec{u}, \vec{v}, \vec{w}$ are linearly independent, then the vectors $\vec{v}$ and $\vec{w}$ must be linearly independent as well.

Select one:

- ☐ a. True
- ☐ b. False

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Question 11

Not yet answered

Marked out of 2

Flag question

Suppose that A, B, C, D and E are matrices with the following sizes:
 $A_{4 \times 5}, B_{4 \times 5}, C_{5 \times 2}, D_{4 \times 2}, E_{5 \times 4}$. Which of the following matrix expression is defined.

Select one or more:

- ☐ $BC - D^T$
- ☐ $AC + D$
- ☐ $BA^T + D$
- ☐ $B^T D + ED$
- ☐ $E(AC)$

Question 12

Not yet answered

Marked out of 1

Flag question

An eigenvalue of A is also an eigenvalue of A^2 .

Select one:

- ☐ True
- ☐ False

Question 13

Not yet answered

Marked out of 2

Flag question

Let $A = \begin{bmatrix} 0 & -2 \\ 1 & 0 \\ 0 & -1 \end{bmatrix}$.

What is the eigenvalues of $A^T A$?

Select one:

- ☐ a. $\lambda = 1$ and $\lambda = 5$
- ☐ b. $\lambda = 2$ and $\lambda = 1$
- ☐ c. $\lambda = 3$ and $\lambda = 1$
- ☐ d. Non of the mentioned
- ☐ e. $\lambda = -1, \lambda = 2$ and $\lambda = 3$

Question 8

Not yet
answered

Marked out of 2

🚩 Flag question

$$\text{Let } A = \begin{bmatrix} 0 & -2 \\ 1 & 0 \\ 0 & -1 \end{bmatrix}.$$

What is the eigenvalues of $A^T A$?

Select one:

- ☐ a. $\lambda = 3$ and $\lambda = 1$
- ☐ b. Non of the mentioned
- ☐ c. $\lambda = -1$, $\lambda = 2$ and $\lambda = 3$
- ☒ d. $\lambda = 1$ and $\lambda = 5$
- ☐ e. $\lambda = 2$ and $\lambda = 1$

Question 8

Not yet
answered

Marked out of 2

🚩 Flag question

$$\text{Let } A = \begin{bmatrix} 0 & -2 \\ 1 & 0 \\ 0 & -1 \end{bmatrix}.$$

What is the eigenvalues of $A^T A$?

Select one:

- ☐ a. $\lambda = 3$ and $\lambda = 1$
- ☐ b. Non of the mentioned
- ☐ c. $\lambda = -1$, $\lambda = 2$ and $\lambda = 3$
- ☒ d. $\lambda = 1$ and $\lambda = 5$
- ☐ e. $\lambda = 2$ and $\lambda = 1$

Question 9

Not yet answered

Marked out of 1

🚩 Flag question

If $A = \begin{pmatrix} 1 & -1 \\ -1 & 1 \end{pmatrix}$ then the linear transformation T_A is one to one .

Select one:

☐ True

☐ False

Question 10

Not yet answered

Marked out of 1

🚩 Flag question

If A and B are both 2×3 matrices, then their product AB is defined.

Select one:

☐ True

☐ False

Question **9**

Not yet
answered

Marked out of 1

🚩 Flag question

There exist two invertible 2×2 matrices A and B such that $\det(A + B) = \det(A) + \det(B)$.

Select one:

- ☐ a. False
- ☐ b. True

Question **10**

Not yet
answered

Marked out of 1

🚩 Flag question

If v_1 and v_2 are both eigenvectors of A , then $v_1 + v_2$ is also an eigenvectors of A .

Select one:

- ☐ True
- ☐ False

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Question 6
Not yet answered
Marked out of 1
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There is only one matrix transformation $T : \mathbb{R}^n \rightarrow \mathbb{R}^m$ such that $T(-x) = -T(x)$ for every vector x in $\mathbb{R}^n$.

Select one:

☐ True

☐ False

Question 7
Not yet answered
Marked out of 1
Flag question

If $\{v_1, v_2, \dots, v_n\}$ is a basis for a vector space V , then every vector in V can be expressed as a linear combination of $v_1, v_2, \dots, v_n$.

Select one:

☐ True

☐ False

Question 8
Not yet answered
Marked out of 2
Flag question

Let $A = \begin{bmatrix} 0 & -2 \\ 1 & 0 \\ 0 & -1 \end{bmatrix}$.

What is the eigenvalues of $A^T A$?

Select one:

☐ a. $\lambda = 3$ and $\lambda = 1$

☐ b. Non of the mentioned

☐ c. $\lambda = -1$, $\lambda = 2$ and $\lambda = 3$

☐ d. $\lambda = 1$ and $\lambda = 5$

☐ e. $\lambda = 2$ and $\lambda = 1$

Question 6

Not yet answered

Marked out of 2

Flag question

Which of the following are linear combinations of $u = (0, -2, 2)$ and $v = (1, 3, -1)$.

Select one:

- ☐ a. $(3, 7, -3)$
- ☐ b. $(-1, -5, 0)$
- ☐ c. $(0, 4, 5)$
- ☐ d. $(2, 2, 2)$
- ☐ e. Non of the mentioned.

Question 7

Not yet answered

Marked out of 1

Flag question

In $\mathcal{P}$, the set $\{x^2, x^4, x^6, \dots\}$ is linearly independent.

Select one:

- ☐ True
- ☐ False

Question 8

Not yet answered

Marked out of 1

Flag question

For all square matrices A and B of the same size it is true that $(A + B)^2 = A^2 + 2AB + B^2$.

Select one:

- ☐ True
- ☐ False

Question 5

Not yet answered

Marked out of 2

Flag question

Which of the following are subspaces of the indicated vector space:

$$W = \left\{ \begin{bmatrix} u_1 \\ u_2 \\ u_3 \end{bmatrix} \in \mathcal{R}^3 : -u_1 = 7u_2 + 2u_3 \right\}$$
$$U = \left\{ \begin{bmatrix} u_1 \\ u_2 \end{bmatrix} \in \mathcal{R}^2 : 2u_1^2 + 3u_2^2 = 0 \right\}$$

Select one:

- ☒ a. Both W and U are subspaces
- ☐ b. Neither W nor U are subspaces
- ☐ c. Only W is a subspace
- ☐ d. Only U is a subspace

Question 1

Not yet answered

Marked out of 1

Flag question

The three polynomials $(x-1)(x+2)$, $x(x+2)$ and $x(x-1)$ are linearly independent.

Select one:

☐ True☒ False

Question 2

Not yet answered

Marked out of 1

Flag question

If for some matrix A , and some vectors $\vec{x}$, $\vec{b}$, we have $A\vec{x} = \vec{b}$, then $\vec{b}$ is a linear combination of the column vectors of A .

Select one:

☒ a. True☐ b. False

Question 3

Not yet answered

Marked out of 2

Flag question

If A is a 4×4 matrix, and $|A| = 10$, then the value of $|3A|$ is equal to:

Select one:

☐ a. $10 + 10 + 10 + 10 = 40$ ☒ b. $81 * 10 = 810$ ☐ c. $10^4 = 10000$ ☐ d. $3 * 10 = 30$

Question 4

Not yet answered

Marked out of 1

Flag question

Let A be a real 2×2 matrix, whose characteristic polynomial dose not have real roots. Then A is digonalizable.

Select one:

☐ True☒ False

Question 4

Not yet answered

Marked out of 2

Flag question

Find the domain and codomain of the transformation defined by the standard matrix $A = \begin{bmatrix} 3 & 1 & 2 & 1 \\ 6 & 7 & 1 & 8 \\ 1 & 8 & 2 & 3 \end{bmatrix}$

Select one:

- ☐ a. domain= $\mathbb{R}^4$, codomain= $\mathbb{R}^4$.
- ☐ b. Non of the mentioned.
- ☐ c. domain= $\mathbb{R}^4$, codomain= $\mathbb{R}^3$.
- ☐ d. domain= $\mathbb{R}^3$, codomain= $\mathbb{R}^4$.
- ☐ e. domain= $\mathbb{R}^3$, codomain= $\mathbb{R}^3$.

Question 5

Not yet answered

Marked out of 1

Flag question

If A and B are both 2×3 matrices, then their product AB is defined.

Select one:

- ☐ True
- ☐ False

Question 1

Not yet answered

Marked out of 2

Flag question

If we have 4×4 matrices with the following characteristic polynomials. Which of them can be diagonalizable

Select one:

- ☐ a. Non of the mentioned
- ☐ b. $t(t-1)^2(t^2+3)$
- ☐ c. $t(t^2+5)^2$
- ☐ d. $(t^2-9)(t^2+4)$
- ☐ e. $(t^2-3t+2)(t^2+4t+4)$

Question 2

Not yet answered

Marked out of 1

Flag question

If, for each eigenvalue λ of A , the multiplicity of λ equals the dimension of the corresponding eigenspace, then A is diagonalizable.

Select one:

- ☐ True
- ☐ False

Question 3

Not yet answered

Marked out of 2

Flag question

Which of the following is in $\text{span}\{(0, -2, 2), (1, 3, -1)\}$.

Select one:

- ☐ a. Non of the mentioned.
- ☐ b. $(1, 5, -3)$
- ☐ c. $(3, 7, -3)$
- ☐ d. $(-1, -5, 0)$
- ☐ e. $(0, 4, 5)$

Question 1

Not yet answered

Marked out of 1

Flag question

The three polynomials $(x - 1)(x + 2)$, $x(x + 2)$ and $x(x - 1)$ are linearly independent.

Select one:

- ☐ True
- ☐ False

Question 2

Not yet answered

Marked out of 1

Flag question

If for some matrix A , and some vectors $\vec{x}$, $\vec{b}$, we have $A\vec{x} = \vec{b}$, then $\vec{b}$ is a linear combination of the column vectors of A .

Select one:

- ☐ a. True
- ☐ b. False

Question 3

Not yet answered

Marked out of 2

Flag question

If A is a 4×4 matrix, and $|A| = 10$, then the value of $|3A|$ is equal to:

Select one:

- ☐ a. $10 + 10 + 10 + 10 = 40$
- ☐ b. $81 * 10 = 810$
- ☐ c. $10^4 = 10000$
- ☐ d. $3 * 10 = 30$

Question 4

Not yet answered

Marked out of 1

Flag question

Let A be a real 2×2 matrix, whose characteristic polynomial does not have real roots. Then A is diagonalizable.



Question 6

Not yet answered

Marked out of 1.0

Flag question

Suppose A is a 3×3 matrix with columns $\mathbf{v}_1$, $\mathbf{v}_2$ and $\mathbf{v}_3$:

$$A = \begin{bmatrix} | & | & | \\ \mathbf{v}_1 & \mathbf{v}_2 & \mathbf{v}_3 \\ | & | & | \end{bmatrix}$$

and $\text{Nul}(A) = \text{Span}\left\{\begin{bmatrix} 0 \\ -2 \\ 0 \end{bmatrix}\right\}$. Are the columns of A linearly dependent, and if so, what is a nontrivial dependence relation between them?

Select one:

- ☒ a. The columns of A are linearly dependent, but neither of the above options is a nontrivial dependence relation
- ☐ b. The columns of A are linearly dependent and $\mathbf{v}_1 - 2\mathbf{v}_2 + \mathbf{v}_3 = \mathbf{0}$
- ☐ c. The columns of A are linearly independent
- ☐ d. The columns of A are linearly dependent and a dependence relation is

$$0\mathbf{v}_1 + 0\mathbf{v}_2 + 0\mathbf{v}_3 = \mathbf{0}$$

- ☐ e. Not enough information to tell

Question 12

Not yet answered

Marked out of 1.0

Flag question

In $\mathcal{P}$, the set $\{x, x^3, x^5, \dots\}$ is linearly dependent.

Select one:

- ☐ True
- ☐ False

Question 4

Not yet answered

Marked out of 1.0

Flag question

The number of nonzero entries in an elementary $n \times n$ matrix is either n or $n + 1$.

Select one:

- ☐ True
- ☐ False

Question 2

Not yet answered

Marked out of 1.0

Flag question

Suppose that A and B are invertible matrices of the same size. Which of the following need not be invertible?

Select one:

- ☐ a. $A^T B^T$
- ☐ b. $B^T A^2$
- ☐ c. there is no answer.
- ☒ d. $(B^2) - A$
- ☐ e. BA^{-1}
- ☐ f. $(AB)^{-1}B$

Let $S = \{1 + x, 1 + x + x^2, 1 + x + x^2 + x^3\}$

Which of the following vectors belong to Span S ?

Select one:

- ☒ a. $4 + 4x + 2x^2 + 3x^3$
- ☐ b. Non of the mentioned
- ☐ c. $x^2 + 5$
- ☐ d. $x^2 - 3x + 5$

Question 16

Not yet
answered

Marked out of
1.0

Flag
question



Which of the following is **NOT** a subspace of the vector space $M_{2 \times 2}$

Select one:

- ☐ a. $W =$ The set of all symmetric matrices $M_{2 \times 2}$.
- ☐ b. Non of the mentioned
- ☐ c. $W = \left\{ \begin{bmatrix} a & b \\ -b & c \end{bmatrix} : \text{All matrices in } M_{2 \times 2} \text{ where } a, b, c \in \mathbb{R} \right\}$
- ☒ d. $W = \left\{ \begin{bmatrix} a & b \\ 0 & c \end{bmatrix} : \text{All matrices in } M_{2 \times 2} \text{ where } a > 3b - c \right\}$
- ☐ e. $W = \left\{ \begin{bmatrix} a & b \\ c & d \end{bmatrix} : \text{All matrices in } M_{2 \times 2} \text{ where } a = -c \right\}$

13

Question 1

Not yet
answeredMarked out of
1.0Flag
question

Let A be a matrix of size 9×14
Which of the following is possible?

Select one or more:

- ☐ $\dim \text{col} A = 10$ and $\dim \text{Null} A = 4$
- ☐ $\dim \text{col} A = 7$ and $\dim \text{row} A = 10$
- ☐ $\dim \text{row} A = 5$ and $\dim \text{Null} A = 10$
- ☒ $\dim \text{col} A = 7$ and $\dim \text{row} A = 7$
- ☐ $\dim \text{row} A = 6$ and $\dim \text{Null} A = 8$
- ☐ $\dim \text{col} A = 5$ and $\dim \text{Null} A = 9$



Question 20

Not yet
answeredMarked out of
1.0Flag
question

Which of the following are subspaces of the indicated vector space:

$W = \{\mathbf{x} \in \mathcal{R}^2 \mid A\mathbf{x} = 3\mathbf{x}\}$, and A is a 2×2 matrix.

$U = \left\{ \mathbf{x} \in \mathcal{R}^2 \mid A\mathbf{x} = \begin{bmatrix} 2 \\ 0 \end{bmatrix} \right\}$, and A is a 2×2 matrix,

Select one:

- ☐ a. Only U is a subspace
- ☐ b. Both W and U are subspaces
- ☐ c. Only W is a subspace
- ☐ d. Neither W nor U are subspaces



Question **21**

Not yet
answered

Marked out of 2

🚩 Flag question

Let $S = \{1 - x^2, x, x^3\}$

Which of the following vectors belong to Span S ?

Select one:

- ☐ a. $-4 + 2x + 4x^2 + 3x^3$
- ☐ b. Non of the mentioned
- ☐ c. $3 - x + 3x^2 + x^3$
- ☐ d. $3 - x + 2x^2 - x^3$

Question **22**

Not yet
answered

Marked out of 1

🚩 Flag question

Let A be a real 2×2 matrix, whose characteristic polynomial dose not have real roots. Then A is digonalizable.

Select one:

- ☐ True
- ☐ False