



Question 7

Not yet answered

Marked out of 2

Flag question

Suppose A is a 4×4 matrix so that

$$A \begin{bmatrix} 5 \\ 4 \\ 5 \\ 1 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 1 \\ 0 \end{bmatrix}, \quad A \begin{bmatrix} 3 \\ 1 \\ 2 \\ 3 \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \\ 0 \\ 0 \end{bmatrix}, \quad A \begin{bmatrix} -3 \\ 1 \\ 7 \\ 2 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}, \quad \text{and} \quad A \begin{bmatrix} 2 \\ 3 \\ 1 \\ -2 \end{bmatrix} = \begin{bmatrix} 0 \\ 1 \\ 0 \\ 0 \end{bmatrix}$$

What is the fourth column of A^{-1} ?

Select one:

- ☐ a. $\begin{bmatrix} 5 \\ 4 \\ 5 \\ 1 \end{bmatrix}$
- ☒ b. $\begin{bmatrix} -3 \\ 1 \\ 7 \\ 2 \end{bmatrix}$
- ☐ c. $\begin{bmatrix} 3 \\ 1 \\ 2 \\ 3 \end{bmatrix}$

أي من المتجهات التالية متوازية:

حدد واحداً أو أكثر:

- ☐ $\begin{bmatrix} 4 \\ 0 \\ -8 \\ -14 \end{bmatrix}$
- ☐ $\begin{bmatrix} -6 \\ 0 \\ 12 \\ 21 \end{bmatrix}$
- ☐ $\begin{bmatrix} -2 \\ 0 \\ 4 \\ 7 \end{bmatrix}$
- ☐ $\begin{bmatrix} 4 \\ -8 \\ 0 \\ -14 \end{bmatrix}$
- ☐ $\begin{bmatrix} -6 \\ 12 \\ 0 \\ 21 \end{bmatrix}$

رد



السؤال رقم 13

لم يتم الرد بعد

تم وضع علامة خارج 1

Flag question

الدالة $T : \mathbb{R}^3 \rightarrow \mathbb{R}^2$ المعرفة بواسطة

$$T \left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} \right) = \begin{bmatrix} x_1 - 4x_3 \\ 3x_2 + 3x_3 \end{bmatrix}$$

هي تحويل خطي.

اختر واحدا:

- ☐ حقيقي
- ☐ خطأ شنيع

Define $T : \mathbb{R}^3 \rightarrow \mathbb{R}^3$ by

$$T \left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} \right) = \begin{bmatrix} 0 \\ 0 \\ x_3 \end{bmatrix}. \text{ Then the}$$

null space of T is

Select one:

- ☐ a. non of the mentioned
- ☐ b. $\text{null}(T) = \text{span}\{e_1, e_2\}$
- ☒ c. $\text{null}(T) = \left\{ \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix} \right\}$
- ☐ d. $\text{null}(T) = \text{span} \left\{ \begin{bmatrix} 0 \\ 0 \\ -1 \end{bmatrix} \right\}$
- ☐ e. $\text{null}(T) = \text{span}\{e_3\}$

Question 17

Not yet answered

Marked out of 2

Flag question

For a matrix A we have that $\left(A^T \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}\right)^T = \begin{bmatrix} 0 & 1 \\ 1 & 2 \end{bmatrix}$

Find the second column of A ?

Select one:

- ☒ a. $\begin{bmatrix} 0 \\ 1 \end{bmatrix}$
- ☐ b. there is no enough information.
- ☐ c. $\begin{bmatrix} 0 \\ 0 \end{bmatrix}$
- ☐ d. $\begin{bmatrix} 1 \\ 0 \end{bmatrix}$
- ☐ e. $\begin{bmatrix} 0 \\ -\frac{1}{2} \end{bmatrix}$
- ☐ f. $\begin{bmatrix} 0 \\ 2 \end{bmatrix}$

Define $T : \mathcal{R}^3 \rightarrow \mathcal{R}^3$ by $T \left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} \right) = \begin{bmatrix} x_3 \\ -2x_2 \\ 2x_1 \end{bmatrix}$. Then the null space of T is

Select one:

- ☐ a. $\text{null}(T) = \text{span}\{e_1, e_3\}$
- ☐ b. non of the mentioned
- ☒ c. $\text{null}(T) = \left\{ \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix} \right\}$
- ☐ d. $\text{null}(T) = \text{span} \left\{ \begin{bmatrix} 1 \\ -2 \\ 2 \end{bmatrix}, \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} \right\}$
- ☐ e. $\text{null}(T) = \text{span} \left\{ \begin{bmatrix} 1 \\ 0 \\ 2 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix} \right\}$

Assume that we have the augment matrix $[Ab]$ of some system :

$$[Ab] = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

Then, Dose the system in reduced row echelon form? How many solutions dose the system has?

Select one or more:

- ☐ The matrix $[Ab]$ is not in reduced row echelon form.
- ☐ The system has no solutions.
- ☐ The system has infinitely many solutions.
- ☐ The matrix $[Ab]$ is in reduced row echelon form.
- ☐ The system has only unique solution.

Question 5

Not yet answered

Marked out of 2

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. $A^{-1}B^{-1}$
- ☐ b. The elementary matrix
- ☐ c. AB^2A
- ☐ d. ABA^{-1}
- ☐ e. AB
- ☐ f. there is no answer.

Question 17

Not yet answered

Marked out of 1

Flag question

The matrix-vector product of an $m \times n$ matrix and a vector yields a vector in $\mathbb{R}^n$.

Select one:

- ☐ a. True
- ☐ b. False

Question 11

Not yet answered

Marked out of 2

 Flag question

The following vectors

$$\begin{bmatrix} -5 \\ 4 \\ 1 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 0 \\ 0 \\ 0 \\ -1 \\ 2 \end{bmatrix}$$

are

Select one or more:

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

Question 13

Not yet answered

Marked out of 2

 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. ABA^{-1}
- ☐ b. there is no answer.
- ☒ c. $A^{-1}B$
- ☐ d. $AB + I$
- ☐ e. The identity matrix
- ☐ f. $A^T B^T$

Question 14

Not yet answered

Marked out of 1

 Flag question

If S is linearly independent, then no vector in S is a linear combination of the others.

Select one:

- ☐ True
- ☒ False

Let $T : \mathbb{R}^2 \rightarrow \mathbb{R}^2$ linear transformation such that

$$T\left(\begin{bmatrix} 1 \\ 1 \end{bmatrix}\right) = \begin{bmatrix} 1 \\ -1 \\ 0 \end{bmatrix} \text{ and}$$

$$T\left(\begin{bmatrix} 2 \\ -3 \end{bmatrix}\right) = \begin{bmatrix} 0 \\ 1 \\ -1 \end{bmatrix} \text{ then}$$

$$T\left(\begin{bmatrix} -4 \\ 1 \end{bmatrix}\right) = \dots\dots\dots$$

Select one:

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

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

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

Question 4

Not yet answered

Marked out of 2

Flag question

Define $T : \mathbb{R}^3 \rightarrow \mathbb{R}^3$ by $T\left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}\right) = \begin{bmatrix} x_2 \\ x_3 \\ 2x_1 - x_3 \end{bmatrix}$. Then the null space of T is

Select one:

☐ a. $\text{null}(T) = \left\{ \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix} \right\}$

☐ b. non of the mentioned

☐ c. $\text{null}(T) = \text{span}\{e_1, e_3\}$

☐ d. $\text{null}(T) = \text{span}\left\{ \begin{bmatrix} 2 \\ 0 \\ 1 \end{bmatrix}, \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} \right\}$

☐ e. $\text{null}(T) = \text{span}\left\{ \begin{bmatrix} 1 \\ 0 \\ 2 \end{bmatrix}, \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix} \right\}$

Question 9

Not yet answered

Marked out of 2

Flag question

Assume that we have the augment matrix $[Ab]$ of some system :

$$[Ab] = \begin{bmatrix} 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

Then, Dose the system in reduced row echelon form? How many solutions dose the system has?

Select one or more:

- ☒ The system has only unique solution.
- ☐ The system has no solutions.
- ☐ The matrix $[Ab]$ is in reduced row echelon form.
- ☒ The matrix $[Ab]$ is not in reduced row echelon form.
- ☐ The system has infinitely many solutions.

Which of the following vectors are parallel :

Select one or more:

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

☐ $\begin{bmatrix} 2 \\ -6 \\ 0 \\ -8 \end{bmatrix}$

☐ $\begin{bmatrix} 2 \\ 6 \\ 0 \\ 8 \end{bmatrix}$

☐ $\begin{bmatrix} -3 \\ 9 \\ 0 \\ 12 \end{bmatrix}$

☐ $\begin{bmatrix} -2 \\ 6 \\ 3 \\ 8 \end{bmatrix}$

Question 10

Not yet answered

Marked out of 1

Flag question

Every vector in $\mathbb{R}^5$ can be written as a linear combination of the standard vectors of $\mathbb{R}^5$.

Select one:

- ☒ a. True
- ☐ b. False

Let $T : \mathbb{R}^2 \rightarrow \mathbb{R}^2$ linear transformation such that

$$T\left(\begin{bmatrix} 1 \\ 2 \end{bmatrix}\right) = \begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix} \text{ and}$$

$$T\left(\begin{bmatrix} 2 \\ -1 \end{bmatrix}\right) = \begin{bmatrix} 0 \\ 1 \\ -1 \end{bmatrix} \text{ then}$$

$$T\left(\begin{bmatrix} 3 \\ -4 \end{bmatrix}\right) = \dots\dots\dots$$

Select one:

- ☐ a. $\begin{bmatrix} 3 \\ -1 \\ 0 \end{bmatrix}$
- ☐ b. $\begin{bmatrix} 2 \\ 3 \\ -1 \end{bmatrix}$
- ☐ c. Non of the mentioned
- ☐ d. $\begin{bmatrix} 2 \\ -1 \\ 3 \end{bmatrix}$
- ☐ e. $\begin{bmatrix} -5 \\ 2 \\ -3 \end{bmatrix}$

Suppose A is a 3×3 matrix so that

$$A \begin{bmatrix} 1 \\ 4 \\ 2 \end{bmatrix} = \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}, \quad A \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}, \quad \text{and} \quad A \begin{bmatrix} 2 \\ 1 \\ 7 \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}$$

What is the third column of A^{-1} ?

Select one:

- ☐ a. $\begin{bmatrix} 2 \\ 1 \\ 7 \end{bmatrix}$
- ☐ b. Not enough information to tell
- ☒ c. $\begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$
- ☐ d. $\begin{bmatrix} 1 \\ 3 \\ 2 \end{bmatrix}$
- ☐ e. $\begin{bmatrix} 1 \\ 4 \\ 2 \end{bmatrix}$

Question 8

Not yet answered

Marked out of 2

 Flag question

If $A = \begin{bmatrix} 3 & -1 & 1 & 4 \\ 3 & 2 & 0 & 5 \\ 1 & 0 & 3 & 0 \end{bmatrix}$ then the codomain of the linear transformation T_A is

Select one:

- ☒ a. $\mathbb{R}^4$
- ☐ b. $\mathbb{R}^5$
- ☐ c. $\mathbb{R}^2$
- ☐ d. $\mathbb{R}^3$

Question 4

Not yet
answered

Marked out of 1

Flag question

If the only solution of $Ax = 0$ is 0, then the rows of A are linearly independent.

Select one:

☒ True

☐ False

Question 5

Not yet
answered

Marked out of 1

Flag question

The function $T : \mathbb{R}^3 \rightarrow \mathbb{R}^3$ defined by

$$T \left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} \right) = \begin{bmatrix} x_1 - x_3 \\ 0 \\ 3x_2^2 \end{bmatrix} \text{ is Linear transformaton.}$$

Select one:

☐ True

☒ False

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

Select one:

☐ a. $(B^2)^{-1}A$

☐ b. AB^T

☐ c. $B^{-1}A^2$

☐ d. A^2BA

☒ e. The identity matrix

☐ f. there is no answer.

Select one or more:

☐ $\begin{bmatrix} 6 \\ -2 \\ -6 \\ 6 \end{bmatrix}$

☐ $\begin{bmatrix} 6 \\ -2 \\ 4 \\ 4 \end{bmatrix}$

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

☒ $\begin{bmatrix} -3 \\ 1 \\ 2 \\ -2 \end{bmatrix}$

☒ $\begin{bmatrix} 15 \\ -5 \\ -10 \\ 10 \end{bmatrix}$

Which of the following vectors are parallel :

Select one or more:

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

☒ $\begin{bmatrix} -4 \\ 8 \\ 4 \\ -8 \end{bmatrix}$

☐ $\begin{bmatrix} -2 \\ -4 \\ 2 \\ 2 \end{bmatrix}$

☒ $\begin{bmatrix} 4 \\ -8 \\ -4 \\ 8 \end{bmatrix}$

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

Question 3

Not yet answered

Marked out of 2

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. $A + B$
- ☐ b. AB
- ☐ c. The identity matrix
- ☐ d. there is no answer.
- ☐ e. ABA^{-1}
- ☐ f. $A^T B^T$

Question 11

Not yet answered

Marked out of 2

Flag question

Suppose A is a 3×3 matrix so that

$$A \begin{bmatrix} 1 \\ 4 \\ 2 \end{bmatrix} = \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}, \quad A \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}, \quad \text{and} \quad A \begin{bmatrix} 2 \\ 1 \\ 7 \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}$$

What is the third column of A^{-1} ?

Select one:

- ☒ a. $\begin{bmatrix} 1 \\ 3 \\ 2 \end{bmatrix}$
- ☐ b. $\begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$
- ☐ c. $\begin{bmatrix} 2 \\ 1 \\ 7 \end{bmatrix}$
- ☐ d. Not enough information to tell
- ☐ e. $\begin{bmatrix} 1 \\ 4 \\ 2 \end{bmatrix}$

Define $T : \mathcal{R}^3 \rightarrow \mathcal{R}^3$ by $T \left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} \right) = \begin{bmatrix} 0 \\ x_1 - x_2 \\ 0 \end{bmatrix}$. Then the null space of T is

Select one:

- ☒ a. $\text{null}(T) = \text{span} \left\{ \begin{bmatrix} 1 \\ 1 \\ 0 \end{bmatrix}, \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} \right\}$
- ☐ b. $\text{null}(T) = \text{span} \left\{ \begin{bmatrix} 1 \\ 1 \\ 0 \end{bmatrix} \right\}$
- ☐ c. none of the mentioned
- ☐ d. $\text{null}(T) = \text{span} \left\{ \begin{bmatrix} -2 \\ 1 \\ 0 \end{bmatrix} \right\}$
- ☐ e. $\text{null}(T) = \text{span}\{e_1, e_2\}$

Question 1

Not yet answered

Marked out of 2

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. $A^2 B A^{-1}$
- ☐ b. $B^3 A^T$
- ☐ c. $A B^{-1}$
- ☐ d. there is no answer.
- ☐ e. $(B^2)^{-1} A$
- ☐ f. The symmetric matrix

Define $T: \mathcal{R}^3 \rightarrow \mathcal{R}^3$ by $T\left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}\right) = \begin{bmatrix} 0 \\ x_3 \\ 2x_1 - x_3 \end{bmatrix}$. Then the null space of T is

Select one:

- ☐ a. non of the mentioned
- ☐ b. $\text{null}(T) = \text{span}\left\{\begin{bmatrix} 1 \\ 0 \\ 2 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}\right\}$
- ☐ c. $\text{null}(T) = \text{span}\left\{\begin{bmatrix} 2 \\ 0 \\ 1 \end{bmatrix}, \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}\right\}$
- ☒ d. $\text{null}(T) = \text{span}\left\{\begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}\right\}$
- ☐ e. $\text{null}(T) = \text{span}\{e_1, e_3\}$

Suppose A is a 3×3 matrix so that

$$A \begin{bmatrix} 3 \\ 4 \\ 2 \end{bmatrix} = \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}, \quad A \begin{bmatrix} -1 \\ 1 \\ 0 \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}, \quad \text{and} \quad A \begin{bmatrix} 2 \\ 1 \\ 7 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}$$

What is the first column of A^{-1} ?

Select one:

- ☐ a. $\begin{bmatrix} 2 \\ 1 \\ 7 \end{bmatrix}$
- ☐ b. $\begin{bmatrix} 3 \\ 4 \\ 2 \end{bmatrix}$
- ☐ c. $\begin{bmatrix} -1 \\ 1 \\ 0 \end{bmatrix}$
- ☐ d. $\begin{bmatrix} 1 \\ 3 \\ 2 \end{bmatrix}$
- ☐ e. Not enough information to tell

Question 16

Not yet answered

Marked out of 1

Flag question

The coefficients in a linear combination can always be chosen to be negative scalars.

Select one:

- ☐ a. False
- ☐ b. True

Question 16

Not yet answered

Marked out of 1

Flag question

If A is an $m \times n$ matrix and u and v are vectors in $\mathbb{R}^n$ such that $Au = Av$, then $u = v$.

Select one:

- ☒ a. True
- ☐ b. False

Question 12

Not yet answered

Marked out of 2

Flag question

Let $T: \mathbb{R}^2 \rightarrow \mathbb{R}^2$ linear transformation such that

$$T\left(\begin{bmatrix} 1 \\ 2 \end{bmatrix}\right) = \begin{bmatrix} 1 \\ 0 \end{bmatrix} \text{ and } T\left(\begin{bmatrix} 2 \\ -1 \end{bmatrix}\right) = \begin{bmatrix} 0 \\ 1 \end{bmatrix} \text{ then}$$

$$T\left(\begin{bmatrix} 0 \\ 5 \end{bmatrix}\right) = \dots\dots\dots$$

Select one:

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

Question 11

Not yet answered

Marked out of 2

Flag question

Suppose A is a 3×3 matrix so that

$$A \begin{bmatrix} 1 \\ 4 \\ 2 \end{bmatrix} = \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}; \quad A \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}, \text{ and } A \begin{bmatrix} 2 \\ 1 \\ 7 \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}$$

What is the third column of A^{-1} ?

Select one:

- ☒ a. $\begin{bmatrix} 1 \\ 3 \\ 2 \end{bmatrix}$
- ☐ b. $\begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$
- ☐ c. $\begin{bmatrix} 2 \\ 1 \\ 7 \end{bmatrix}$
- ☐ d. Not enough information to tell
- ☐ e. $\begin{bmatrix} 1 \\ 4 \\ 2 \end{bmatrix}$

Question 15

Not yet answered

Marked out of 2

Flag question

Assume that we have the augment matrix $[Ab]$ of some system:

$$[Ab] = \begin{bmatrix} 1 & -2 & 0 & 4 \\ 0 & 0 & 1 & 3 \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

Then, Does the system in reduced row echelon form? How many solutions does the system has?

Select one or more:

- ☐ The system has no solutions.
- ☐ The matrix $[Ab]$ is not in reduced row echelon form.
- ☐ The system has infinitely many solutions.
- ☐ The system has only unique solution.
- ☐ The matrix $[Ab]$ is in reduced row echelon form.

Define $T : \mathbb{R}^3 \rightarrow \mathbb{R}^3$ by $T \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix} = \begin{bmatrix} x_2 \\ x_1 + 2x_2 \\ x_3 \end{bmatrix}$. Then the null space of T is

Select one:

- ☐ a. $\text{null}(T) = \text{span}\{e_2\}$
- ☒ b. $\text{null}(T) = \left\{ \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix} \right\}$
- ☐ c. non of the mentioned
- ☐ d. $\text{null}(T) = \text{span} \left\{ \begin{bmatrix} -2 \\ 1 \\ 0 \end{bmatrix} \right\}$
- ☐ e. $\text{null}(T) = \text{span}\{e_1, e_3\}$

The function $T : \mathbb{R}^3 \rightarrow \mathbb{R}^3$ defined by $T \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix} = \begin{bmatrix} x_1 - x_3 \\ x_2 + 5x_3 \\ 2x_1 - 3x_2 \end{bmatrix}$ is Linear transformation.

Select one:

- ☐ True
- ☐ False

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

Select one:

- ☒ a. $AB + I$
- ☐ b. $A^{-1}B$
- ☐ c. $A^T B^T$
- ☐ d. ABA^{-1}
- ☐ e. there is no answer.
- ☐ f. The identity matrix

Which of the following are symmetric matrices :

Select one or more:

☐ $\begin{bmatrix} 0 & 0 & 1 \\ 0 & -1 & -9 \\ 1 & 9 & 2 \end{bmatrix}$

☒ $\begin{bmatrix} 0 & -3 & 0 \\ -3 & 0 & -9 \\ 0 & -9 & 0 \end{bmatrix}$

☐ $\begin{bmatrix} 8 & 0 & -1 \\ 0 & 1 & 7 \\ 0 & 7 & 0 \end{bmatrix}$

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

Question 10

Not yet
answered

Marked out of 1

Flag question

A homogeneous equation always has infinitely many solutions.

Select one:

☐ True

☐ False

Question 9

Not yet
answered

Marked out of 2

Flag question

Let $A = \begin{bmatrix} 0 & 1 & 0 & 3 & 0 & -1 & 0 \\ 0 & 0 & 1 & 3 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$ then $\text{nullity } A =$

Select one:

☐ a. 3

☐ b. 5

☐ c. non of the mentioned

☐ d. 4

☐ e. 2

Question 7

Not yet answered

Marked out of 2

Flag question

Suppose A is a 4×4 matrix so that

$$A \begin{bmatrix} 5 \\ 4 \\ 5 \\ 1 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 1 \\ 0 \end{bmatrix}, \quad A \begin{bmatrix} 3 \\ 1 \\ 2 \\ 3 \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \\ 0 \\ 0 \end{bmatrix}, \quad A \begin{bmatrix} -3 \\ 1 \\ 7 \\ 2 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}, \quad \text{and} \quad A \begin{bmatrix} 2 \\ 3 \\ 1 \\ -2 \end{bmatrix} = \begin{bmatrix} 0 \\ 1 \\ 0 \\ 0 \end{bmatrix}$$

What is the fourth column of A^{-1} ?

Select one:

- ☐ a. $\begin{bmatrix} 5 \\ 4 \\ 5 \\ 1 \end{bmatrix}$
- ☐ b. $\begin{bmatrix} -3 \\ 1 \\ 7 \\ 2 \end{bmatrix}$
- ☐ c. $\begin{bmatrix} 3 \\ 1 \\ 2 \\ 3 \end{bmatrix}$
- ☐ d. $\begin{bmatrix} 2 \\ 3 \\ 1 \\ -2 \end{bmatrix}$

Define $T: \mathcal{R}^3 \rightarrow \mathcal{R}^3$ by $T \left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} \right) = \begin{bmatrix} 0 \\ x_3 \\ 2x_1 - x_3 \end{bmatrix}$. Then the null space of T is

Select one:

- ☒ a. $\text{null}(T) = \text{span}\{e_1, e_3\}$
- ☐ b. $\text{null}(T) = \text{span} \left\{ \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix} \right\}$
- ☐ c. non of the mentioned
- ☐ d. $\text{null}(T) = \text{span} \left\{ \begin{bmatrix} 1 \\ 0 \\ 2 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix} \right\}$
- ☐ e. $\text{null}(T) = \text{span} \left\{ \begin{bmatrix} 2 \\ 0 \\ 1 \end{bmatrix}, \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} \right\}$

Question 5

Not yet
answered

Marked out of 2

Flag question

Define $T : \mathbb{R}^3 \rightarrow \mathbb{R}^3$ by $T \left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} \right) = \begin{bmatrix} 0 \\ x_3 \\ 2x_1 - x_3 \end{bmatrix}$. Then the null space of T is

Select one:

- ☐ a. $\text{null}(T) = \text{span} \left\{ \begin{bmatrix} 2 \\ 0 \\ 1 \end{bmatrix}, \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} \right\}$
- ☐ b. $\text{null}(T) = \text{span} \left\{ \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix} \right\}$
- ☐ c. $\text{null}(T) = \text{span}\{e_1, e_3\}$
- ☐ d. $\text{null}(T) = \text{span} \left\{ \begin{bmatrix} 1 \\ 0 \\ 2 \end{bmatrix}, \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix} \right\}$
- ☐ e. non of the mentioned

Question 11

Not yet
answered

Marked out of 1

Flag question

The matrix-vector product of an $m \times n$ matrix and a vector yields a vector in $\mathbb{R}^n$.

Select one:

- ☐ a. True
- ☐ b. False

Question 12

Not yet
answered

Marked out of 2

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. AB
- ☐ b. ABA^{-1}

If A is an $m \times n$ matrix and u and v are vectors in $\mathbb{R}^n$ such that $Au = Av$, then $u = v$.

Select one:

- ☐ a. False
- ☐ b. True

The function $T : \mathbb{R}^3 \rightarrow \mathbb{R}^3$ defined by $T \left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} \right) = \begin{bmatrix} 0 \\ 5x_3 \\ 2x_1 - 3x_2 + 4x_3 \end{bmatrix}$ is Linear transformation.

Select one:

- ☐ True
- ☐ False

If $A = \begin{bmatrix} -7 & 4 & 0 & 3 & 2 \\ 3 & 1 & 5 & 0 & -4 \\ 3 & -1 & 0 & -4 & 1 \end{bmatrix}$ then the codomain of the linear transformation T_A is

Select one:

- ☐ a. $\mathbb{R}^5$
- ☐ b. $\mathbb{R}^4$
- ☐ c. $\mathbb{R}^3$
- ☐ d. $\mathbb{R}^2$

Suppose A is a 4×4 matrix so that

$$A \begin{bmatrix} 5 \\ 4 \\ 0 \\ 1 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 1 \\ 0 \end{bmatrix}, A \begin{bmatrix} 3 \\ 1 \\ 2 \\ 0 \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \\ 0 \\ 0 \end{bmatrix}, \text{ and } A \begin{bmatrix} 0 \\ 1 \\ -7 \\ 2 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 1 \end{bmatrix}$$

What is the second column of A^{-1} ?

Select one:

- ☐ a. Not enough information to tell
- ☐ b. $\begin{bmatrix} 3 \\ 1 \\ 2 \\ 0 \end{bmatrix}$
- ☐ c. $\begin{bmatrix} 2 \\ 0 \\ 1 \\ -2 \end{bmatrix}$
- ☐ d. $\begin{bmatrix} 6 \\ 4 \\ 0 \end{bmatrix}$

Let $A = \begin{bmatrix} 1 & 0 & 0 & 1 & 0 & -1 & 0 \\ 0 & 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 \end{bmatrix}$ then $\text{nullity } A =$

Select one:

- ☐ a. 2
- ☐ b. 4
- ☐ c. 3
- ☐ d. non of the mentioned
- ☐ e. 5

The following vectors

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

are

Select one or more:

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

Let $A = \begin{bmatrix} 1 & 0 & 0 & 1 & 0 & -1 & 0 \\ 0 & 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 \end{bmatrix}$ then $\text{nullity } A =$

Select one:

- ☐ a. 2
- ☐ b. 4
- ☐ c. 3
- ☐ d. non of the mentioned
- ☐ e. 5

Define $T: \mathcal{R}^3 \rightarrow \mathcal{R}^3$ by $T\left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}\right) = \begin{bmatrix} 0 \\ x_3 \\ 2x_1 - x_3 \end{bmatrix}$. Then the null space of T is

Select one:

- ☐ a. non of the mentioned
- ☐ b. $\text{null}(T) = \text{span}\{e_1, e_3\}$
- ☐ c. $\text{null}(T) = \text{span}\left\{\begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}\right\}$
- ☐ d. $\text{null}(T) = \text{span}\left\{\begin{bmatrix} 2 \\ 0 \\ 1 \end{bmatrix}, \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}\right\}$
- ☐ e. $\text{null}(T) = \text{span}\left\{\begin{bmatrix} 1 \\ 0 \\ 2 \end{bmatrix}, \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}\right\}$

Suppose A is a 4×4 matrix so that

$$A \begin{bmatrix} 5 \\ 4 \\ 0 \\ 1 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 1 \\ 0 \end{bmatrix}, A \begin{bmatrix} 3 \\ 1 \\ 2 \\ 0 \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \\ 0 \\ 0 \end{bmatrix}, \text{ and } A \begin{bmatrix} 0 \\ 1 \\ -7 \\ 2 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 1 \end{bmatrix}$$

What is the second column of A^{-1} ?

Select one:

☐ a. Not enough information to tell

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

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

☐ d. $\begin{bmatrix} 5 \\ 4 \\ 0 \\ 1 \end{bmatrix}$

☐ e. $\begin{bmatrix} 0 \\ 1 \end{bmatrix}$

Suppose A is a 4×4 matrix so that

$$A \begin{bmatrix} 5 \\ 4 \\ 0 \\ 1 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 1 \\ 0 \end{bmatrix}, A \begin{bmatrix} 3 \\ 1 \\ 2 \\ 0 \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \\ 0 \\ 0 \end{bmatrix}, \text{ and } A \begin{bmatrix} 0 \\ 1 \\ -7 \\ 2 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 1 \end{bmatrix}$$

What is the second column of A^{-1} ?

Select one:

☐ a. Not enough information to tell

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

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

☐ d. $\begin{bmatrix} 5 \\ 4 \\ 0 \\ 1 \end{bmatrix}$

☐ e. $\begin{bmatrix} 0 \\ 1 \end{bmatrix}$

Assume that we have the augment matrix $[Ab]$ of some system :

$$[Ab] = \begin{bmatrix} 1 & 0 & -6 & 0 \\ 0 & 1 & 4 & 7 \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

Then, Dose the system in reduced row echelon form? How many solutions dose the system has?

Select one or more:

- ☐ The matrix $[Ab]$ is in reduced row echelon form.
- ☐ The system has only unique solution.
- ☐ The matrix $[Ab]$ is not in reduced row echelon form.
- ☐ The system has infinitely many solutions.
- ☐ The system has no solutions.

Determine the values of r for which v is in the span of S :

$$S = \left\{ \begin{bmatrix} -1 \\ 2 \\ 2 \end{bmatrix}, \begin{bmatrix} 1 \\ -1 \\ 0 \end{bmatrix} \right\}, v = \begin{bmatrix} 2 \\ -6 \\ r \end{bmatrix}$$

Select one:

- ☐ a. -6
- ☒ b. -8
- ☐ c. 2
- ☐ d. 1

Suppose A is a 4×4 matrix so that

$$A \begin{bmatrix} 5 \\ 4 \\ 5 \\ 1 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 1 \\ 0 \end{bmatrix}, \quad A \begin{bmatrix} 3 \\ 1 \\ 2 \\ 3 \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \\ 0 \\ 0 \end{bmatrix}, \quad A \begin{bmatrix} -3 \\ 1 \\ 7 \\ 2 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 1 \end{bmatrix}, \quad \text{and } A \begin{bmatrix} 2 \\ 3 \\ 1 \\ -2 \end{bmatrix} =$$

What is the third column of A^{-1} ?

Select one:

☐ a. $\begin{bmatrix} 3 \\ 1 \\ 2 \\ 3 \end{bmatrix}$

☐ b. $\begin{bmatrix} 5 \\ 4 \\ 5 \\ 1 \end{bmatrix}$

☐ c. Not enough information to tell

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

Define $T : \mathcal{R}^3 \rightarrow \mathcal{R}^3$ by $T \left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} \right) = \begin{bmatrix} x_2 \\ 0 \\ 2x_1 - x_3 \end{bmatrix}$. Then the null space of T is

Select one:

☐ a. $\text{null}(T) = \text{span} \left\{ \begin{bmatrix} 2 \\ 0 \\ 1 \end{bmatrix}, \begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix} \right\}$

☐ b. non of the mentioned

☐ c. $\text{null}(T) = \text{span} \left\{ \begin{bmatrix} 1 \\ 0 \\ 2 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix} \right\}$

☐ d. $\text{null}(T) = \text{span} \left\{ \begin{bmatrix} 1 \\ 0 \\ 2 \end{bmatrix} \right\}$

☐ e. $\text{null}(T) = \text{span}\{e_2\}$

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

Select one:

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

Question 17

Not yet answered

Marked out of 1

Flag question

Let $A = \begin{pmatrix} 1 & 2 & 0 \\ 0 & 1 & 2 \\ 0 & 0 & 0 \end{pmatrix}$ then A is invertible .

Select one:

- ☐ True
- ☐ False

Question 16

Not yet answered

Marked out of 2

Flag question

Assume that we have the augment matrix $[Ab]$ of some system :

$$[Ab] = \begin{bmatrix} 1 & 0 & 3 & 0 \\ 0 & 1 & 2 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}$$

Then, Does the system in reduced row echelon form? How many solutions does the system has?

Select one or more:

- ☐ The matrix $[Ab]$ is in reduced row echelon form.
- ☐ The system has only unique solution.
- ☐ The system has no solutions.
- ☐ The system has infinitely many solutions.
- ☐ The matrix $[Ab]$ is not in reduced row echelon form.

Question 15
Not yet
answered
Marked out of 2
Flag question

Suppose A is a 3×3 matrix so that

$$A \begin{bmatrix} 1 \\ 4 \\ 2 \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}, \quad A \begin{bmatrix} 3 \\ 1 \\ 0 \end{bmatrix} = \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}, \quad \text{and} \quad A \begin{bmatrix} 2 \\ 1 \\ 7 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}$$

What is the first column of A^{-1} ?

Select one:

- ☐ a. $\begin{bmatrix} 1 \\ 3 \\ 2 \end{bmatrix}$
- ☐ b. $\begin{bmatrix} 1 \\ 4 \\ 2 \end{bmatrix}$
- ☐ c. $\begin{bmatrix} 3 \\ 1 \\ 0 \end{bmatrix}$
- ☐ d. Not enough information to tell
- ☐ e. $\begin{bmatrix} 2 \\ 1 \\ 7 \end{bmatrix}$

Question 14
Not yet
answered
Marked out of 1
Flag question

The function $T: \mathbb{R}^3 \rightarrow \mathbb{R}^2$ defined by $T\left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}\right) = \begin{bmatrix} x_1^2 - x_3 \\ x_2 + 3x_3 \end{bmatrix}$ is Linear transformation.

Select one:

- ☐ True
- ☐ False

Question 13
Not yet
answered
Marked out of 2
Flag question

Let $T: \mathbb{R}^2 \rightarrow \mathbb{R}^2$ linear transformation such that $T\left(\begin{bmatrix} 1 \\ 2 \end{bmatrix}\right) = \begin{bmatrix} -2 \\ 0 \\ 1 \end{bmatrix}$ and $T\left(\begin{bmatrix} 0 \\ 3 \end{bmatrix}\right) = \begin{bmatrix} 6 \\ -3 \\ 3 \end{bmatrix}$ then $T\left(\begin{bmatrix} -2 \\ -7 \end{bmatrix}\right) = \dots\dots\dots$

Select one:

- ☐ a. $\begin{bmatrix} 2 \\ -3 \\ 5 \end{bmatrix}$
- ☐ b. $\begin{bmatrix} 3 \\ -2 \\ -5 \end{bmatrix}$
- ☐ c. Non of the mentioned
- ☐ d. $\begin{bmatrix} 5 \\ -3 \\ -2 \end{bmatrix}$
- ☐ e. $\begin{bmatrix} -2 \\ 1 \\ -5 \end{bmatrix}$

Question 11

Not yet answered

Marked out of 2

Flag question

Which of the following are symmetric matrices :

Select one or more:

☐ $\begin{bmatrix} 0 & -3 & 0 \\ 3 & 0 & -9 \\ 0 & 9 & 0 \end{bmatrix}$

☐ $\begin{bmatrix} 3 & 0 & 7 \\ 0 & -5 & 0 \\ 7 & 0 & 2 \end{bmatrix}$

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

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

Question 10

Not yet answered

Marked out of 2

Flag question

If $A = \begin{bmatrix} 3 & -1 & 1 & 4 & 5 & 8 \\ 3 & 2 & 0 & 1 & 4 & 5 \\ 1 & 4 & 1 & 0 & 3 & 0 \\ 1 & 7 & -3 & 0 & 3 & 2 \end{bmatrix}$ then the domain of the linear transformation T_A is

Select one:

- ☐ a. $\mathbb{R}^5$
☐ b. $\mathbb{R}^3$
☐ c. $\mathbb{R}^4$
☐ d. $\mathbb{R}^6$

Question 9

Not yet answered

Marked out of 2

Flag question

compute the vector found by rotating $u = \begin{bmatrix} 5 \\ 2 \end{bmatrix}$ by the angle $\theta = 90$.

Select one:

- ☐ a. $\begin{bmatrix} -5 \\ 2 \end{bmatrix}$
☐ b. $\begin{bmatrix} -2 \\ 5 \end{bmatrix}$
☐ c. $\begin{bmatrix} 5 \\ 2 \end{bmatrix}$
☐ d. $\begin{bmatrix} 2 \\ 5 \end{bmatrix}$
☐ e. non of the mentioned

Question 8

Not yet answered

Marked out of 2

Flag question

For a matrix A we have that $\left(2A^T + \begin{bmatrix} 1 & 0 \\ 1 & 2 \end{bmatrix}\right)^T = \begin{bmatrix} 1 & 0 \\ 1 & 2 \end{bmatrix}$

Find the first column of A ?

Select one:

- ☐ a. $\begin{bmatrix} 1 \\ 2 \end{bmatrix}$
- ☐ b. there is no enough information.
- ☐ c. $\begin{bmatrix} 0 \\ 1 \end{bmatrix}$
- ☐ d. $\begin{bmatrix} 1 \\ 0 \end{bmatrix}$
- ☐ e. $\begin{bmatrix} 0 \\ 0 \end{bmatrix}$
- ☐ f. $\begin{bmatrix} 0 \\ -\frac{1}{2} \end{bmatrix}$

Question 7

Not yet answered

Marked out of 2

Flag question

The following vectors

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

are

Select one or more:

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

Question 6

Not yet answered

Marked out of 2

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. The identity matrix
- ☐ b. AB
- ☐ c. ABA^{-1}
- ☐ d. there is no answer.
- ☐ e. $A^T B^T$
- ☐ f. $A + B$

Question 4

Not yet answered

Marked out of 1

Flag question

If the columns of a 3×4 matrix are distinct, then they are linearly dependent.

Select one:

- ☐ True
- ☐ False

Question 5

Not yet answered

Marked out of 2

Flag question

Which of the following matrices are elementary matrices?

Select one:

- ☐ a. Non of the mentioned.
- ☐ b. $\begin{pmatrix} 1 & 0 \\ -5 & 1 \end{pmatrix}$
- ☐ c. $\begin{pmatrix} 0 & 1 \\ -1 & 1 \end{pmatrix}$
- ☐ d. $\begin{pmatrix} 0 & 1 \\ -7 & -1 \end{pmatrix}$
- ☐ e. $\begin{pmatrix} -1 & -2 \\ 0 & 1 \end{pmatrix}$

Question 3

Not yet answered

Marked out of 2

Flag question

Which of the following vectors are parallel :

Select one or more:

☐ $\begin{bmatrix} 6 \\ -12 \\ 30 \\ 0 \end{bmatrix}$

☐ $\begin{bmatrix} 8 \\ 16 \\ 0 \\ 4 \end{bmatrix}$

☐ $\begin{bmatrix} -2 \\ 4 \\ 0 \\ -10 \end{bmatrix}$

☐ $\begin{bmatrix} 2 \\ -4 \\ 0 \\ 10 \end{bmatrix}$

☐ $\begin{bmatrix} 8 \\ -16 \\ 0 \\ 40 \end{bmatrix}$

Question 2

Not yet answered

Marked out of 2

Flag question

Define $T: \mathcal{R}^3 \rightarrow \mathcal{R}^3$ by $T\left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}\right) = \begin{bmatrix} x_2 \\ x_3 \\ 2x_1 - x_3 \end{bmatrix}$. Then the null space of T is

Select one:

☐ a. $\text{null}(T) = \left\{ \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix} \right\}$

☐ b. $\text{null}(T) = \text{span}\{e_1, e_3\}$

☐ c. $\text{null}(T) = \text{span}\left\{ \begin{bmatrix} 1 \\ 0 \\ 2 \end{bmatrix}, \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix} \right\}$

☐ d. non of the mentioned

☐ e. $\text{null}(T) = \text{span}\left\{ \begin{bmatrix} 2 \\ 0 \\ 1 \end{bmatrix}, \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} \right\}$

Question 1

Not yet answered

Marked out of 2

Flag question

Let $A = \begin{bmatrix} 1 & 0 & 0 & 1 & 0 & -4 & 0 \\ 0 & 0 & 1 & 0 & 0 & -3 & 0 \\ 0 & 0 & 0 & 0 & 1 & 8 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 \end{bmatrix}$ then $\text{nullity} A =$

Select one:

☐ a. 2

☐ b. 3

☐ c. non of the mentioned

☐ d. 5

☐ e. 4

Question 17

Not yet answered

Marked out of 2

Flag question

For a matrix A we have that $\left(A^T \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}\right)^T = \begin{bmatrix} 0 & 1 \\ 1 & 2 \end{bmatrix}$

Find the first row of A ?

Select one:

- ☐ a. $\begin{bmatrix} 2 & 0 \end{bmatrix}$
- ☐ b. $\begin{bmatrix} 0 & 1 \end{bmatrix}$
- ☐ c. $\begin{bmatrix} 0 & 0 \end{bmatrix}$
- ☐ d. $\begin{bmatrix} 0 & 2 \end{bmatrix}$
- ☐ e. there is no enough information.
- ☐ f. $\begin{bmatrix} 1 & 0 \end{bmatrix}$

Question 16

Not yet answered

Marked out of 2

Flag question

Which of the following vectors are parallel :

Select one or more:

☐ $\begin{bmatrix} 4 \\ -6 \\ 12 \\ -2 \end{bmatrix}$

☐ $\begin{bmatrix} -6 \\ 9 \\ -18 \\ 3 \end{bmatrix}$

☐ $\begin{bmatrix} -2 \\ 3 \\ -6 \\ 1 \end{bmatrix}$

☐ $\begin{bmatrix} 6 \\ 12 \\ 21 \\ 0 \end{bmatrix}$

☐ $\begin{bmatrix} 2 \\ 6 \\ 6 \\ 1 \end{bmatrix}$

Question 14

Not yet answered

Marked out of 1

Flag question

Every vector in $\mathbb{R}^5$ can be written as a linear combination of the standard vectors of $\mathbb{R}^5$.

Select one:

- ☐ a. False
- ☐ b. True

Question 15

Not yet answered

Marked out of 2

Flag question

Assume that we have the augment matrix $[Ab]$ of some system :

$$[Ab] = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

Then, Dose the system in reduced row echelon form? How many solutions dose the system has?

Select one or more:

- ☐ The system has infinitely many solutions.
- ☐ The system has no solutions.
- ☐ The matrix $[Ab]$ is not in reduced row echelon form.
- ☐ The matrix $[Ab]$ is in reduced row echelon form.
- ☐ The system has only unique solution.

Question 13

Not yet answered

Marked out of 2

Flag question

Which of the following matrices are elementary matrices?

Select one:

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

Question 12

Not yet answered

Marked out of 2

Flag question

If $A = \begin{bmatrix} 3 & -1 & 1 & 4 & 5 & 8 \\ 3 & 2 & 0 & 1 & 4 & 5 \\ 1 & 4 & 1 & 0 & 3 & 0 \\ 1 & 7 & -3 & 0 & 3 & 2 \end{bmatrix}$ then the codomain of the linear transformation T_A is

Select one:

- ☐ a. $\mathbb{R}^5$
- ☐ b. $\mathbb{R}^3$
- ☐ c. $\mathbb{R}^4$
- ☐ d. $\mathbb{R}^6$

Question 11

Not yet answered

Marked out of 2

Flag question

Let $T: \mathbb{R}^2 \rightarrow \mathbb{R}^2$ linear transformation such that $T\left(\begin{bmatrix} 1 \\ 1 \end{bmatrix}\right) = \begin{bmatrix} 1 \\ -1 \\ 0 \end{bmatrix}$ and $T\left(\begin{bmatrix} 2 \\ -3 \end{bmatrix}\right) = \begin{bmatrix} 0 \\ 1 \\ -1 \end{bmatrix}$ then $T\left(\begin{bmatrix} 4 \\ -1 \end{bmatrix}\right) = \dots\dots\dots$

Select one:

☐ a. Non of the mentioned

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

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

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

☐ e. $\begin{bmatrix} 2 \\ -1 \\ -4 \end{bmatrix}$

Question 9

Not yet answered

Marked out of 1

Flag question

Let $A = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & \frac{3}{7} \end{pmatrix}$ then A is invertible .

Select one:

☐ True

☐ False

Question 8

Not yet answered

Marked out of 2

Flag question

The following vectors

$$\begin{bmatrix} 1 \\ -1 \\ 1 \\ -1 \\ 1 \end{bmatrix}, \begin{bmatrix} 0 \\ -1 \\ 0 \\ -1 \\ 0 \end{bmatrix}$$

are

Select one or more:

☐ linearly independence.

☐ no answer.

☐ linearly Dependence.

Question 7

Not yet answered

Marked out of 1

Flag question

The function $T: \mathbb{R}^3 \rightarrow \mathbb{R}^3$ defined by $T\left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}\right) = \begin{bmatrix} x_1 - 4x_3 \\ -8x_3 \\ 2x_1 - 5x_2 \end{bmatrix}$ is Linear transformaton.

Select one:

☐ True

☐ False

Question 6

Not yet answered

Marked out of 2

Flag question

Let $A = \begin{bmatrix} 0 & 1 & 0 & 3 & 0 & -1 & 0 \\ 0 & 0 & 1 & 3 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$ then $\text{nullity } A =$

Select one:

- ☐ a. 5
- ☐ b. 3
- ☐ c. 2
- ☐ d. 4
- ☐ e. non of the mentioned

Question 5

Not yet answered

Marked out of 2

Flag question

Define $T: \mathbb{R}^3 \rightarrow \mathbb{R}^3$ by $T\left(\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}\right) = \begin{bmatrix} 0 \\ x_1 + 2x_2 \\ x_3 \end{bmatrix}$. Then the null space of T is

Select one:

- ☐ a. $\text{null}(T) = \text{span}\{e_1, e_3\}$
- ☐ b. $\text{null}(T) = \text{span}\left\{\begin{bmatrix} -2 \\ 1 \\ 0 \end{bmatrix}\right\}$
- ☐ c. $\text{null}(T) = \text{span}\left\{\begin{bmatrix} 1 \\ -2 \\ 1 \end{bmatrix}\right\}$
- ☐ d. non of the mentioned
- ☐ e. $\text{null}(T) = \text{span}\{e_2\}$

Question 3

Not yet answered

Marked out of 2

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. AB
- ☐ b. there is no answer.
- ☐ c. The identity matrix
- ☐ d. $(A^T)^{-1}B$
- ☐ e. ABA^{-1}
- ☐ f. $A^T B^T$

Question 4

Not yet answered

Marked out of 1

Flag question

The set of standard vectors in $\mathbb{R}^n$ is linearly independent.

Select one:

- ☐ True
- ☐ False

Question 2

Not yet
answered

Marked out of 2

Flag question

Which of the following are Skew-symmetric matrices :

Select one or more:

☐ $\begin{bmatrix} 0 & 0 & 1 \\ 0 & -1 & 9 \\ 1 & 9 & 2 \end{bmatrix}$

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

☐ $\begin{bmatrix} 8 & 0 & -1 \\ 0 & 1 & 7 \\ -1 & 7 & 0 \end{bmatrix}$

☐ $\begin{bmatrix} 0 & -3 & 0 \\ 3 & 0 & -9 \\ 0 & 9 & 0 \end{bmatrix}$

Suppose A is a 4×4 matrix so that

$$A \begin{bmatrix} 2 \\ 0 \\ 1 \\ -2 \end{bmatrix} = \begin{bmatrix} 0 \\ 1 \\ 0 \\ 0 \end{bmatrix}, \quad A \begin{bmatrix} 5 \\ 4 \\ 0 \\ 1 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 1 \\ 0 \end{bmatrix}, \quad A \begin{bmatrix} 3 \\ 1 \\ 2 \\ 0 \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \\ 0 \\ 0 \end{bmatrix}, \quad \text{and} \quad A \begin{bmatrix} 0 \\ 1 \\ -7 \\ 2 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 1 \end{bmatrix}$$

What is the second column of A^{-1} ?

Select one:

☐ a. $\begin{bmatrix} 5 \\ 4 \\ 0 \\ 1 \end{bmatrix}$

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

☐ c. Not enough information to tell

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

☐ e. $\begin{bmatrix} 0 \\ 1 \\ -7 \\ 2 \end{bmatrix}$

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

Select one:

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