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Asslam-o-Alaikum! In this file we'll provide you **MTH501 quiz 3 2023 Important Finalterm MCQs. Must Prepare Before Finalterm Exams.** Verify Answers yourself too. If you found mistake then inform me.

If you found mistake then let us know.

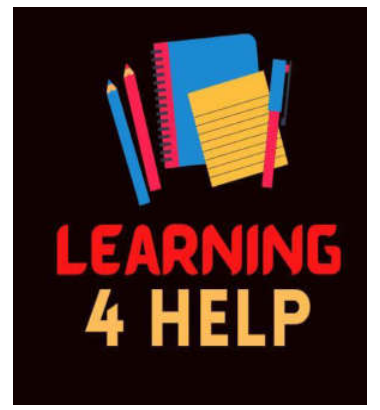
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Question # 10 of 10 (Start time: 10:00:38 PM, 12 July 2023) Total Marks: 1

Let A be an n by n matrix whose distinct eigen values are $\lambda_1, \lambda_2, \dots, \lambda_p$. For $1 \leq k \leq p$, the dimension of the eigen space for λ_k is ----- than or ----- to the multiplicity of the eigen value λ_k .

Select the correct option

Less, equal

Greater, equal

Reload Math Equations

Question # 9 of 10 (Start time: 09:59:10 PM, 12 July 2023) Total Marks: 1

The trace and determinant of a 2×2 matrix are known to be -2 and -35 respectively. Its Eigen values are

Select the correct option

17.5 and -2

-30 and -5

-37 and -1

-7 and 5 .

Question # 8 of 10 (Start time: 09:58:23 PM, 12 July 2023) Total Marks: 1

Two matrices with the same characteristic polynomial _____ similar.

Select the correct option

may not be

must be

Question # 7 of 10 (Start time: 09:57:31 PM, 12 July 2023) Total Marks: 1

Two vectors are linearly dependent if and only if they lie _____

Select the correct option

on the same line through origin

on a line parallel to x-axis

[Reload Math Equations](#)

Question # 4 of 10 (Start time: 09:56:08 PM, 12 July 2023) Total Marks: 1

An $n \times n$ matrix A is diagonalizable if and only if A has n linearly _____ eigenvectors.

Select the correct option

<input type="radio"/>	independent
<input type="radio"/>	dependent

Question # 3 of 10 (Start time: 09:55:22 PM, 12 July 2023) Total Marks: 1

If $n \times n$ matrices A and B are similar, then they have the same characteristic polynomial and hence the same eigenvalues (with the same multiplicities).

Select the correct option

<input type="radio"/>	False
<input checked="" type="radio"/>	True

Question # 2 of 10 (Start time: 09:54:26 PM, 12 July 2023) Total Marks: 1

If A is a triangular matrix then the eigenvalues of A are the entries on the main diagonal of A.

Select the correct option

True

False

Windows taskbar showing search, file explorer, and various open applications like VLC, Quiz, MTH5, Bandi, bc210, and settings. The system clock shows 9:55 PM on Wednesday, 7/12/2023.

Question # 1 of 10 (Start time: 09:53:10 PM, 12 July 2023) Total Marks: 1

An _____ matrix with n distinct eigenvalues is diagonalizable

Select the correct option

None of these

$m \times n$

Null

$n \times n$

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[Click to Save Answer & Move to Next Question](#)

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Question # 10 of 10 (Start time: 09:45:41 PM, 12 July 2023) **Total Marks: 1**

Which one of the following statements is true for all real symmetric matrices?

Select the correct option

- All the eigenvalues are real.
- All the eigenvalues are distinct
- Sum of all the eigenvalues is zero.
- All the eigenvalues are positive.

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Question # 9 of 10 (Start time: 09:44:22 PM, 12 July 2023) **Total Marks: 1**

An $n \times n$ matrix is diagonalizable with n ----- eigenvalues

Select the correct option [Reload Math Equations](#)

- Identical
- 0
- Similar
- Distinct

[Click to Save Answer & Move to Next Question](#)

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Question # 7 of 10 (Start time: 09:43:13 PM, 12 July 2023) Total Marks: 1

An $n \times n$ matrix with n distinct eigen values is _____.

Select the correct option

- diagonalizable
- invertible
- Hermitian
- symmetric

Question # 6 of 10 (Start time: 09:41:53 PM, 12 July 2023) Total Marks: 1

If λ is an eigenvalue of a matrix A and \mathbf{x} is a corresponding eigenvector, and if k is any positive integer, then λ^k is an eigenvalue of _____ and \mathbf{x} is a corresponding eigenvector.

Select the correct option

- A
- λ
- λ^k
- A^k

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Question # 6 of 10 (Start time: 09:41:53 PM, 12 July 2023) Total Marks: 1

If λ is an eigenvalue of a matrix A and x is a corresponding eigenvector, then for any positive integer, then λ^k is an eigenvalue of _____ and x is a corresponding eigenvector.

Select the correct option

A
 λ
 λ^k
 A^k

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Question # 5 of 10 (Start time: 09:41:09 PM, 12 July 2023) Total Marks: 1

If $x+2$ is a factor of the characteristic polynomial of matrix C then an eigenvalue of C is

Select the correct option

1/2
 -2
 0
 2

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$x_1 + 2x_2 + 3x_3 = 7$
 $4x_1 + x_2 + 2x_3 = 2$
 $-4x_1 + 3x_2 + 9x_3 = 4$

The augmented matrix for the system is -----

Select the correct option

$\begin{pmatrix} 1 & 2 & 3 \\ 4 & 1 & 2 \\ -4 & 3 & 9 \end{pmatrix}$

$\begin{bmatrix} 1 & 2 & 3 \\ -4 & 1 & 2 \\ 4 & 3 & 9 \end{bmatrix}$

$\begin{bmatrix} 1 & 2 & 3 & 7 \\ 4 & 1 & 2 & 2 \\ -4 & 3 & 9 & 4 \end{bmatrix}$

$\begin{bmatrix} 1 & 2 & 3 & 7 \\ 4 & 1 & 2 & 2 \\ 1 & 2 & 3 & 7 \end{bmatrix}$

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Question # 1 of 10 (Start time: 09:38:18 PM, 12 July 2023) Total Marks: 1

Let A be an $n \times n$ matrix whose distinct eigen values are $\lambda_1, \lambda_2, \dots, \lambda_p$. The matrix A is diagonalizable if and only if the ----- of the dimensions of the distinct eigen spaces is equal to n .

Select the correct option

Product

sum

Click to Save Answer & Move to Next Question

9:39 PM Wednesday 7/12/2023

Question # 10 of 10 (Start time: 09:31:53 PM, 12 July 2023) Total Marks: 1

Let A be $n \times n$ matrix, then A is invertible if and only if

Select the correct option

<input type="radio"/>	det A is not zero
<input type="radio"/>	det A is zero

Question # 9 of 10 (Start time: 09:31:07 PM, 12 July 2023) Total Marks: 1

A column replacement operation on A does not change the _____

Select the correct option

<input type="radio"/>	column
<input type="radio"/>	row
<input checked="" type="radio"/>	determinant
<input type="radio"/>	matrix

Question # 7 of 10 (Start time: 09:28:50 PM, 12 July 2023) Total Marks: 1

If A is a $m \times n$ matrix and

$$A = A^T$$

which of the following must always be true?

Select the correct option Reload Math Equations

- $m = n$
- m and n are different

Question # 6 of 10 (Start time: 09:28:03 PM, 12 July 2023) Total Marks: 1

A matrix A is diagonalizable if and only if there are enough eigenvectors to form a basis of

Select the correct option Reload Math Equations

- R^2
- R^3
- None of the above
- R^n

Question # 1 of 10 (Start time: 09:04:56 PM, 12 July 2023)

Total Marks:

Every square matrix A has at least one -----.

Select the correct option

Fixed point

Critical point

Question # 4 of 10 (Start time: 09:27:05 PM, 12 July 2023)

Total Marks: 1

If $\lambda - 2$ is a factor of the characteristic polynomial of matrix A , then which of the following is the Eigenvalue of A ?

Select the correct option

[Reload Math Equations](#)

$\frac{1}{2}$

2

0

-2

Question # 3 of 10 (Start time: 09:25:56 PM, 12 July 2023) Total Marks: 1

Eigenvalues of a square matrix are always

Select the correct option

- Positive.
- Real
- Negative
- Real and imaginary

Question # 1 of 10 (Start time: 09:24:07 PM, 12 July 2023) Total Marks: 1

Let $T : \mathbb{R}^2 \rightarrow \mathbb{R}^2$ be transformation $T(x_1, x_2) = (x, 0)$. The null space (or kernel) $N(T)$ of T is

Select the correct option

- $(x_1, 0)$
- $(0, x_2)^*$
- $(1, 0)$
- $(0, 1)$

Reload Math Equations

Question # 10 of 10 (Start time: 09:18:56 PM, 12 July 2023) Total Marks: 1

If λ is an eigenvector of A , then every nonzero vector x such that $Ax = \lambda x$ is called an ----- of A corresponding to -----

Select the correct option

- Eigenvalue, λ
- Eigenvalue, A
- Eigenvector, A
- Eigenvector, λ

Click to Save Answer & Move to Next Question

MTH501 - Linear Algebra (Quiz 2) Quiz Start Time: 09:04 PM, 12 July 2023

Question # 9 of 10 (Start time: 09:17:24 PM, 12 July 2023) Total Marks: 1

If $\lambda + 2$ is a factor of the characteristic polynomial of matrix C , then which of the following is the Eigenvalue of C ?

Select the correct option

- 0
- $\frac{1}{2}$
- 2
- 2

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Question # 9 of 10 (Start time: 09:17:24 PM, 12 July 2023) Total Marks: 1

If $\lambda + 2$ is a factor of the characteristic polynomial of matrix C , then which of the following is the Eigenvalue of C ?

Select the correct option Reload Math Equations

0

$\frac{1}{3}$

2

-2

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Question # 8 of 10 (Start time: 09:15:56 PM, 12 July 2023) Total Marks: 1

If $x+2$ is a factor of the characteristic polynomial of matrix C then an eigenvalue of C is

Select the correct option

2

-2

0

$\frac{1}{2}$

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Question # 6 of 10 (Start time: 09:13:48 PM, 12 July 2023) Total Marks: 1

Diagonalization is a process of transforming a vector A to the form

Select the correct option Reload Math Equations

$A = PDP^{-1}$

$A = P^{-1}DP$

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Question # 5 of 10 (Start time: 09:12:46 PM, 12 July 2023) Total Marks: 1

If 3 is an eigenvalue of A and x is a corresponding eigenvector, then what is the eigenvalue of A^2 ?

Select the correct option Reload Math Equations

9

12

3

6

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Question # 4 of 10 (Start time: 09:10:55 PM, 12 July 2023) Total Marks: 1

If A be $n \times n$ matrix, then $\det(A^T) =$ -----

Select the correct option Reload Math Equations

$\det A^T$

inverse of A

$\det A$

$1/\det A$

Click to Save Answer & Move to Next Question

Question # 5 of 10 (Start time: 09:09:22 PM, 12 July 2023) Total Marks: 1

Corresponding to highest Eigen value the eigenvector is

$$\begin{pmatrix} 1 & 6 & 1 \\ 1 & 2 & 0 \\ 0 & 0 & 3 \end{pmatrix}$$

Select the correct option Reload Math Equations

$\begin{bmatrix} 0 \\ 1 \\ 2 \end{bmatrix}$

$\begin{bmatrix} 1 \\ 2 \\ 0 \end{bmatrix}$

$\begin{bmatrix} 2 \\ 0 \\ 1 \end{bmatrix}$

Question # 2 of 10 (Start time: 09:07:48 PM, 12 July 2023) Total Marks: 1

Two matrices with the same characteristic polynomial _____ similar.

Select the correct option

<input checked="" type="radio"/>	may not be
<input type="radio"/>	must be

MTH501 - Linear Algebra (Quiz 3) Quiz Start Time: 05:43 PM, 30 January 2023

Question # 8 of 10 (Start time: 05:50:12 PM, 30 January 2023) Total Marks: 1

A matrix $[A]_{n \times n}$ has both positive and negative eigenvalues so in this case origin behaves as a _____

Select the correct option

<input checked="" type="radio"/>	Saddle point
<input type="radio"/>	Critical point

[Reload Math Equations](#)

For any vectors u and v , the length of vector $u - v$ will be _____.

Select the correct option

<input checked="" type="radio"/>	$ u - v $
<input type="radio"/>	$\ u - v\ $
<input type="radio"/>	$\ u \cdot v\ $

If we divide a non-zero vector by its length we get a

Select the correct option

<input type="radio"/>	normalized vector
<input type="radio"/>	none of these
<input checked="" type="radio"/>	unit vector
<input type="radio"/>	zero vector

Question # 5 of 10 (Start time: 05:46:06 PM, 30 January 2023)

Total Marks: 1

If the columns of a matrix are _____ then the matrix is invertible.

Select the correct option

- linearly independent
- linearly dependent

For a real matrix A, complex Eigen values and associated Eigen vectors come in -----

Select the correct option

[Reload Math Equations](#)

- conjugate pairs
- similar pairs
- none of the above
- Complex pairs

[Click to Save Answer & Move to Next Question](#)

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Question # 1 of 10 (Start time: 05:43:15 PM, 30 January 2023)

Total Marks: 1

Two vectors are _____ if at least one of the vector is a multiple of the other

Select the correct option

- linearly dependent
- linearly independent

$7x + 2y = 16$
 $-21x - 6y = 24$
The above system has a _____ solution.

Select the correct option

- trivial
- unique
- inconsistent
- consistent

Let V be a one Eigen vector then conjugate eigen vector is represented by,

Select the correct option

[Reload Math Equations](#)

V^*

V

\tilde{V}

\bar{V}

[Click to Save Answer & Move to Next Question](#)

MTH501 - Linear Algebra (Quiz 3) Quiz Start Time: 03:09 PM, 30 January 2023

Question # 8 of 10 (Start time: 03:18:37 PM, 30 January 2023) Total Marks: 1

A vector whose length is 1 is called -----

Select the correct option

[Reload Math Equations](#)

Unit Vector

Identity Vector

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If there is a vector $v = (2, 1, 0)$ then $\|v\|$ is -----

Select the correct option

Reload Math Equations

- 3
- 0
- $\sqrt{5}$
- 2

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For u and v vectors in R^n , the distance between u and v written as $dist(u, v)$ is the length of the vector-----

Select the correct option

Reload Math Equations

- $v - u$
- $u - v$

Click to Save Answer & Move to Next Question

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If there is a vector $u = (1, -1, 2)$ then $\|u\|$ is-----

Select the correct option

Reload Math Equations

$\sqrt{7}$

2

0

$\sqrt{6}$

Click to Save Answer & Move to Next Question

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A partitioned square matrix 'A' is said to be _____ matrix if the matrices on the main diagonal are square and all matrices above the main diagonal are zero.

Select the correct option

Reload Math Equations

Diagonal-constant

Block lower triangular

Block upper triangular

Null

Click to Save Answer & Move to Next Question

Question # 2 of 10 (Start time: 03:09:58 PM, 30 January 2023)

Total Marks: 1

The matrix $M = \begin{bmatrix} a & 4 & 5 & 6 \\ 7 & a & 4 & 5 \\ 8 & 7 & a & 4 \\ 9 & 8 & 7 & a \end{bmatrix}$ is a _____ matrix.

Select the correct option

[Reload Math Equations](#)

- Diagonal
- Identity
- Toeplitz
- Rectangular

Question # 1 of 10 (Start time: 03:09:22 PM, 30 January 2023)

Total Marks: 1

The zero vector is orthogonal to every vector in R^n

Select the correct option

[Reload Math Equations](#)

- True
- False

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MTH501 - Linear Algebra (Quiz 3)

Question # 10 of 10 (Start time: 05:51:24 PM, 30 January 2023) Total Marks: 1

Each pair of eigenvalue and its corresponding eigenvector provides a solution of the equation $x' = Ax$ which is called ----- of the differential equation.

Select the correct option Reload Math Equations

<input type="radio"/>	Eigen vectors
<input checked="" type="radio"/>	Eigen functions

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