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Question No : 1 of 52 Marks: 1 (Budgeted Time 1 Min)

Which statement about the General Least Square Method is true?

Answer (Please select your correct option)

- Solution obtained by this method is always unique.
- This is a numerical method for the solution of System of Linear Equations.
- This method find an x that makes Ax as close as possible to the b.
- This method gives us exact solution of the system.

Question No : 2 of 52 Marks: 1 (Budgeted Time 1 Min)

Let $v = (1, -2, 2, 0)$ .The unit vector in the same direction as v is

Answer (Please select your correct option)

- $\left(\frac{1}{3}, \frac{2}{3}, \frac{2}{3}, 0\right)$
- $\left(\frac{1}{3}, \frac{-2}{3}, \frac{2}{3}, 0\right)$ correct
- $\left(\frac{-1}{3}, \frac{2}{3}, \frac{-2}{3}, 0\right)$
- $\left(\frac{1}{3}, \frac{-2}{3}, \frac{2}{3}, \frac{1}{3}\right)$

Question No : 3 of 52 Marks: 1 (Budgeted Time 1 Min)

Let $u = (3, -2), v = (4, 5)$ .For the weighted Euclidean inner product $\langle u, v \rangle = 4u_1v_1 + 5u_2v_2$

$\langle v, u \rangle =$

Answer (Please select your correct option)

- 2
- -2
- 3
- -3

Question No : 4 of 52 Marks: 1 (Budgeted Time 1 Min)

Let $v = (0,2,2,1)$ .The unit vector in the same direction as v is

Answer (Please select your correct option)

- $\left(0,\frac{2}{3},\frac{2}{3},\frac{-1}{3}\right)$
- $\left(0,\frac{-2}{3},\frac{2}{3},\frac{-1}{3}\right)$
- $\left(0,\frac{2}{3},\frac{2}{3},\frac{1}{3}\right)$
- $\left(0,\frac{-2}{3},\frac{2}{3},\frac{1}{3}\right)$

Question No : 5 of 52 Marks: 1 (Budgeted Time 1 Min)

Let $\mathbb{R}^3$ have the Euclidean inner product. Then $u=(2,1,3), v=(1,7,k)$ are orthogonal for

Answer (Please select your correct option)

- $k=9$
- $k=-3$
- $k=-9$
- $k=3$

Question No : 6 of 52 Marks: 1 (Budgeted Time 1 Min)

Let A be $n \times n$ matrix whose entries are real. If λ is an eigenvalue of A with x a corresponding eigenvector in $\mathbb{C}^n$, then

Answer (Please select your correct option)

- $A\bar{x} = \lambda\bar{x}$
- $A\bar{x} = \bar{\lambda}\bar{x}$
- $A\bar{x} = \bar{\lambda}x$
- $A\bar{x} = \lambda^{-1}\bar{x}$

Question No : 7 of 52 Marks: 1 (Budgeted Time 1 Min)

Suppose that $A = \begin{bmatrix} 1.25 & -.75 \\ -.75 & 1.25 \end{bmatrix}$ has eigenvalues 2 and 0.5 .Then origin is a

Answer (Please select your correct option)

- Saddle point

correct

- Repellor
- Attractor

Question No : 8 of 52 Marks: 1 (Budgeted Time 1 Min)

Suppose that $A = \begin{bmatrix} 0.5 & 0.6 \\ -0.3 & 1.4 \end{bmatrix}$ has eigenvalues 0.8 and 1.1 .Then origin is a

Answer (Please select your correct option)

- Saddle point

correct

- Repellor
- Attractor

Question No : 9 of 52 Marks: 1 (Budgeted Time 1 Min)

If A is an $m \times n$ matrix with linearly independent column vectors, then A can be factored as

$$A = QR$$

Where Q is an $m \times n$ matrix with orthonormal column vectors, and R is an $n \times n$

Answer (Please select your correct option)

- Upper triangular matrix — correct

- Invertible matrix
- Invertible lower triangular matrix
- Invertible upper triangular matrix

Question No : 10 of 52 Marks: 1 (Budgeted Time 1 Min)

The matrix equation $A^T A\hat{x} = A^T b$ represents a system of linear equations commonly referred to as the

Answer (Please select your correct option)

- normal equations for x
- normal equations for $\hat{x}$
- normal equations for A
- normal equations for b

Question No : 11 of 52 Marks: 1 (Budgeted Time 1 Min)

By the Best Approximation Theorem, the distance from y to W is $\|y - \hat{y}\|$, where $\hat{y} =$

Answer (Please select your correct option)

- $\text{proj}_w \hat{y}$
- $\text{proj}_w y$
- $\text{proj}_y w$

correct

Question No : 12 of 52 Marks: 1 (Budgeted Time 1 Min)

$\|u + v + w\| \leq \|u\| + \|v\| + \|w\|$ for all vectors u, v and w in an inner product space.

Answer (Please select your correct option)

- True

correct

- False

Question No : 13 of 52 Marks: 1 (Budgeted Time 1 Min)

The dominant eigenvalue for the matrix $A = \begin{bmatrix} 0 & 0 & 2 & 0 \\ 1 & 0 & 1 & 0 \\ 0 & 1 & -3 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$ is

Answer (Please select your correct option)

- $\lambda = 1$
- $\lambda = -3$

correct

- $\lambda = -1$
- $\lambda = 0$

Question No : 14 of 52 Marks: 1 (Budgeted Time 1 Min)

A square matrix A is invertible if and only if x = 0 is not an eigen value of A.

Answer (Please select your correct option)

- True

correct

- False

Question No : 15 of 52 Marks: 1 (Budgeted Time 1 Min)

A square matrix with orthogonal columns _____ matrix. (Click on most appropriate)

Answer (Please select your correct option)

- is an orthogonal

- may be an orthogonal
- may not be an orthogonal
- is not an orthogonal

Question No : 16 of 52 Marks: 1 (Budgeted Time 1 Min)

If two rows are orthogonal, they are _____.

Answer (Please select your correct option)

- linearly independent

- linearly dependent

Question No : 17 of 52 Marks: 1 (Budgeted Time 1 Min)

If x is orthogonal to both u and v, then x must be _____ to $u + v$.

Answer (Please select your correct option)

- orthogonal
- orthonormal

check

- perpendicular
- parallel

Question No : 18 of 52 Marks: 1 (Budgeted Time 1 Min)

The given system $2x + 3y = 3$, $6x + 9y = 7$ has

Answer (Please select your correct option)

- Unique solution
- Infinitely many solutions
- No solution
- None of these

Question No : 19 of 52 Marks: 1 (Budgeted Time 1 Min)

Which statement about the matrix $\begin{bmatrix} 1 & 0 & 0 & 0 \\ 7 & 2 & 0 & 0 \\ 9 & 1 & 2 & 0 \\ 5 & 4 & 2 & -1 \end{bmatrix}$ is false?

Answer (Please select your correct option)

- Eigenvalue 2 has Algebraic multiplicity 1
- Eigenvalue of the matrix are 1, 2 and -1.
- Characteristic polynomial of the matrix is $(1-\lambda)(2-\lambda)^2(-1-\lambda)$.
- Eigenvalue -1 has multiplicity 1.

Question No : 20 of 52 Marks: 1 (Budgeted Time 1 Min)

If $A = \begin{pmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{pmatrix}$ is diagonalizable then A has 2 distinct eigenvalues.

Answer (Please select your correct option)

- True

$$\begin{matrix} 0 & 1 \\ 1 & 0 \end{matrix}$$

Correct answer solved by Hadi
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- False

Question No : 21 of 52 Marks: 1 (Budgeted Time 1 Min)

A is diagonalizable if $A = PDP^{-1}$ Where

Answer (Please select your correct option)

- D is any matrix and P is an invertible matrix
- D is a diagonal matrix and P is any matrix
- D is a diagonal matrix and P is invertible matrix
- D is a invertible matrix and P is any matrix

Question No : 22 of 52 Marks: 1 (Budgeted Time 1 Min)

Which statement is FALSE.

Answer (Please select your correct option)

- If $Ax = \lambda x$ for some real number λ then λ is known as eigenvalue of t he matrix A.
- The eigenvalues of any matrix are on its main diagonal.
- In order to find the eigenvalues we solve the equation $|A - \lambda| = 0$
- An eigenspaces of A is the Null space of some matrix.

Question No : 34 of 52 Marks: 1 (Budgeted Time 1 Min)

If a set $S=\{1, x, x^2\}$ is a basis for p_2 and $[\overset{I}{p}]_S = (2, 4, 7)$, then which of the following is the most appropriate option ?

Answer (Please select your correct option)

- $p_2 = 2 - 4x + 7x^2$
- $p_2 = 2 - 4x - 7x^2$
- $p_2 = 2 + 4x + 7x^2$
- $p_2 = 4x - 7x^2$

Question No : 35 of 52 Marks: 1 (Budgeted Time 1 Min)

Which of the following is the set of standard basis for R^3 ?

Answer (Please select your correct option)

- $\{(1,1,0),(0,1,0),(1,0,1)\}$
- $\{(1,0,0),(0,1,0),(0,0,1)\}$
- $\{(1,0,0),(1,1,0),(0,0,1)\}$
- $\{(1,0,0),(0,1,0),(1,1,1)\}$

Question No : 36 of 52 **Marks: 1 (Budgeted Time 1 Min)**

Consider the bases for R^2 given by $B=\left\{\vec{b}_1, \vec{b}_2\right\}$ and $C=\left\{\vec{c}_1, \vec{c}_2\right\}$; where $\vec{b}_1=\begin{bmatrix}1\\0\end{bmatrix}$, $\vec{b}_2=\begin{bmatrix}-1\\1\end{bmatrix}$, $\vec{c}_1=\begin{bmatrix}-5\\3\end{bmatrix}$, $\vec{c}_2=\begin{bmatrix}-2\\1\end{bmatrix}$, also assume that $P_{B\leftarrow C}=\begin{bmatrix}-2 & -1\\3 & 1\end{bmatrix}$; then which of the following is the change-of-coordinates matrix from B to C ?

Answer (Please select your correct option)

- $P_{C\leftarrow B}=\begin{bmatrix}1 & 1\\-3 & -2\end{bmatrix}$
- $P_{C\leftarrow B}=\begin{bmatrix}1 & -1\\0 & 1\end{bmatrix}$
- $P_{C\leftarrow B}=\begin{bmatrix}-5 & -2\\3 & 1\end{bmatrix}$
- $P_{C\leftarrow B}=\begin{bmatrix}-8 & -3\\3 & 1\end{bmatrix}$

Question No : 37 of 52 Marks: 1 (Budgeted Time 1 Min)

If the general term of a typical signal is $(0.6)^k$, then determine which of the following is the signal for $k = -2$?

Answer (Please select your correct option)

- $(0.6)^{-2} = 0$
- $(0.6)^{-2} = 0.6$
- $(0.6)^{-2} = (0.6)^2$
- $(0.6)^{-2} = 1/(0.6)^2$

Question No : 38 of 52 Marks: 1 (Budgeted Time 1 Min)

If the Casorati matrix is not invertible , then which of the following is the most appropriate option regarding the associated signals ?

Answer (Please select your correct option)

- The signals are linearly independent .
- The signals are linearly dependent .
- The signals may or may not dependent .
- The signals may or may not independent .

If $\{y_k\} = \{\ldots, 1, 0.7, 0, -0.7, -1, -0.7, 0, 0.7, 1, 0.7, 0, \ldots\}$ and $0.35y_{k+2} + 0.6y_{k+1} + 0.42y_k = z_k$;

$\uparrow$

$k = 0$

then which of the following is the value of z_0 ?

Answer (Please select your correct option)

- 0.840
- 0.049
- −0.770
- − 1.139

Question No : 40 of 52 Marks: 1 (Budgeted Time 1 Min)

Suppose that $B = \{b_1, b_2\}$ is a basis for V and $C = \{c_1, c_2, c_3\}$ is a basis for W. Let $T : V \to W$ be a linear transformation with the property that $T(b_1) = 5c_1 - 2c_2 + 3c_3$ and $T(b_2) = 4c_1 - c_2 + 7c_3$. Determine the value of $[T(b_2)]_C$?

Answer (Please select your correct option)

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

Determine whether the set of vectors are orthogonal or not.

$$\begin{bmatrix} 5 \\ -4 \\ 0 \\ \end{bmatrix}, \begin{bmatrix} -4 \\ 1 \\ -3 \\ \end{bmatrix}, \begin{bmatrix} 3 \\ 3 \\ 5 \\ \end{bmatrix}$$

Answer (Please click here to Add Answer)

Question No : 1 of 52 **Marks: 1 (Budgeted Time 1 Min)**

Which statement about the General Least Square Method is true?

Answer (Please select your correct option)

- Solution obtained by this method is always unique.
- This is a numerical method for the solution of System of Linear Equations.
- This method find an x that makes Ax as close as possible to the b.
- This method gives us exact solution of the system.

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Question No : 2 of 52 **Marks: 1 (Budgeted Time 1 Min)**

Let $v = (1, -2, 2, 0)$ .The unit vector in the same direction as v is

Answer (Please select your correct option)

- $\left(\frac{1}{3}, \frac{2}{3}, \frac{2}{3}, 0\right)$
- $\left(\frac{1}{3}, \frac{-2}{3}, \frac{2}{3}, 0\right)$
- $\left(\frac{-1}{3}, \frac{2}{3}, \frac{-2}{3}, 0\right)$
- $\left(\frac{1}{3}, \frac{-2}{3}, \frac{2}{3}, \frac{1}{3}\right)$

ans

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Question No : 3 of 52 **Marks: 1 (Budgeted Time 1 Min)**

Let $v = (1, -2, 2, 0)$ .The unit vector in the same direction as v has magnitude

Answer (Please select your correct option)

- 3

ans

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- 1
- 2
- -1

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3

Question No : 4 of 52 **Marks: 1 (Budgeted Time 1 Min)**

Let ¡ ^{3} have the Euclidean inner product. Then $u = (2,1,3), v = (1,7,k)$ are orthogonal for

out of

Answer (Please select your correct option)

- $k = 9$
- $k = -3$
- $k = -9$
- $k = 3$

Question No : 5 of 52 **Marks: 1 (Budgeted Time 1 Min)**

Let ¡ ^{3} have the Euclidean inner product. Then $u = (k, -3, 1), v = (-3, 5, 6)$ are orthogonal for

out of

Answer (Please select your correct option)

- $k = 2$
- $k = -2$
- $k = 3$
- $k = -3$

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5

Question No : 6 of 52 **Marks: 1 (Budgeted Time 1 Min)**

If u and v are orthogonal then

Answer (Please select your correct option)

- $\|u - v\|^2 = \|u\| + \|v\|$
- $\|u - v\| = \|u\|^2 + \|v\|^2$
- $\|u - v\|^2 = \|u\|^2 + \|v\|^2$
- $\|u - v\|^{\frac{1}{2}} = \|u\| + \|v\|$

i thinkkkkk.....

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6

Question No : 7 of 52 **Marks: 1 (Budgeted Time 1 Min)**

Suppose that $A = \begin{bmatrix} 0.5 & 0.6 \\ -0.3 & 1.4 \end{bmatrix}$ has eigenvalues 0.8 and 1.1 .Then origin is a

Answer (Please select your correct option)

- Saddle point

Correct answer solved by Hadi
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- Repellor
- Attractor

Question No : 7 of 52 **Marks: 1 (Budgeted Time 1 Min)**

Suppose that $A = \begin{bmatrix} 0.5 & 0.6 \\ -0.3 & 1.4 \end{bmatrix}$ has eigenvalues 0.8 and 1.1 .Then origin is a

Answer (Please select your correct option)

- Saddle point

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- Repellor
- Attractor

Question No : 8 of 52 **Marks: 1 (Budgeted Time 1 Min)**

If A is an $m \times n$ matrix with linearly independent column vectors, then A can be factored as

$$A = QR$$

Where Q is an $m \times n$ matrix with orthonormal column vectors, and R is an $n \times n$

Answer (Please select your correct option)

- Upper triangular matrix

ans

- Invertible matrix
- Invertible lower triangular matrix
- Invertible upper triangular matrix

Question No : 9 of 52 **Marks: 1 (Budgeted Time 1 Min)**

The QR-Decomposition of a 3×3 matrix A gives

Answer (Please select your correct option)

- matrix Q of order 3×1 and R of order 3×1
- matrix Q of order 3×3 and R of order 3×1
- matrix Q of order 3×3 and R of order 3×3

ans

$$\begin{matrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{matrix}$$

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Question No : 10 of 52 **Marks: 1 (Budgeted Time 1 Min)**

The QR-Decomposition of a 5×2 matrix A gives

Answer (Please select your correct option)

- matrix Q of order 5×1 and R of order 5×1
- matrix Q of order 5×2 and R of order 2×5
- matrix Q of order 5×2 and R of order 2×2

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119:00

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10

Question No : 11 of 52 **Marks: 1 (Budgeted Time 1 Min)**

If u,v and w are vectors in a real inner product space, and k is any scalar , then which one of the following is not a property for the inner product space

out of

Answer (Please select your correct option)

- $\langle 0,v\rangle = \langle v,0\rangle$
- $\langle u,kv\rangle = k\langle u,v\rangle$
- $\langle u,v-w\rangle = \langle u,v\rangle + \langle u,w\rangle$

Question No : 12 of 52 **Marks: 1 (Budgeted Time 1 Min)**

The dominant eigenvalue for the matrix $A = \begin{bmatrix} 0 & 0 & 2 & 0 \\ 1 & 0 & 1 & 0 \\ 0 & 1 & -3 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$ is

Answer (Please select your correct option)

- $\lambda = 1$
- $\lambda = -3$

ans

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- $\lambda = -1$
- $\lambda = 0$

Question No : 13 of 52 **Marks: 1 (Budgeted Time 1 Min)**

_____ of a matrix is the sum of main diagonal elements of that matrix.

Answer (Please select your correct option)

- Trace
- Determinent

ans

- Eigenvalue
- Sum

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119:00

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13

Question No : 14 of 52 **Marks: 1 (Budgeted Time 1 Min)**

If a square matrix has orthonormal columns, then it also has _____.

Answer (Please select your correct option)

orthonormal rows

ans

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orthonormal diagonal

Question No : 15 of 52 **Marks: 1 (Budgeted Time 1 Min)**

If x is orthogonal to both u and v, then x must be _____ to $u - v$.

Answer (Please select your correct option)

- orthogonal
- orthonormal
- perpendicular
- parallel

if u-v then this option

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ans

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15

Question No : 16 of 52 **Marks: 1 (Budgeted Time 1 Min)**

If a matrix U has orthonormal columns, then _____ = I

Answer (Please select your correct option)

- UU^T ans
- UU
- U^{-1}
- $U+U^T$

Question No : 17 of 52 **Marks: 1 (Budgeted Time 1 Min)**

If 5 is an eigenvalue of A and x is a corresponding eigenvector, then the eigenvalue of A^2 is

Answer (Please select your correct option)

- 5
- 25

ans

A2= 5(2)=25

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- 10
- 15

Question No : 18 of 52 **Marks: 1 (Budgeted Time 1 Min)**

The eigenvalues of the matrix $\begin{bmatrix} 3 & -4 & 1 \\ 0 & -5 & 1 \\ 0 & 0 & 4 \end{bmatrix}$ are

we read down to up

Answer (Please select your correct option)

- 3,-4,1
- 4,-5,3
- 3,-5,1
- 4,1,-5

ans

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3
-5
4

Question No : 19 of 52 **Marks: 1 (Budgeted Time 1 Min)**

If $A = \begin{pmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{pmatrix}$ is diagonalizable, then A is invertible.

Answer (Please select your correct option)

- True

ans

- False

Start Time: 11:33 PM

119:00

19

Question No : 20 of 52 **Marks: 1 (Budgeted Time 1 Min)**

An $n \times n$ matrix A is diagonalizable if and only if A has

Answer (Please select your correct option)

- n linearly independent eigenvectors

ans

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- n^2 linearly independent eigenvectors
- $n+1$ linearly independent eigenvectors

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20

Question No : 21 of 52 **Marks: 1 (Budgeted Time 1 Min)**

Let A have eigenvalues 2, 5, 0,-7, and -2. Then the dominant eigenvalue for A is

Answer (Please select your correct option)

- $\lambda = 5$
- $\lambda = 0$
- $\lambda = -7$
- $\lambda = 2$

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Question No : 22 of 52 **Marks: 1 (Budgeted Time 1 Min)**

Which statement is FALSE.

Answer (Please select your correct option)

- If $Ax = \lambda x$ for some real number λ then λ is known as eigenvalue of t he matrix A.
- The eigenvalues of any matrix are on its main diagonal.

ans

- In order to find the eigenvalues we solve the equation $|A - \lambda| = 0$
- An eigenspaces of A is the Null space of some matrix.

Question No : 23 of 52 **Marks: 1 (Budgeted Time 1 Min)**

Algebra is a transformation of real life problems into sort of _____.

Answer (Please select your correct option)

- logical representation

ans

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- mathematical representation
- physical representation
- illogical representation

Question No : 24 of 52 **Marks: 1 (Budgeted Time 1 Min)**

If reduced echelon form of a linear system is $\begin{bmatrix} 1 & 0 & 5 & 5 \\ 0 & 1 & 1 & 6 \\ 0 & 0 & 0 & 0 \end{bmatrix}$ when free variable $x_3 = 0$, then which of the following is true for it?

Answer (Please select your correct option)

- The particular solution is (0, 5, 6).
- The particular solution is (6, 5, 0) .
- The particular solution is (5, 6, 0) .

ans

- The particular solution is (0, 6, 5) .

Question No : 25 of 52 **Marks: 1 (Budgeted Time 1 Min)**

If the vector equation $c_1 \vec{v}_1 + c_2 \vec{v}_2 = 0$ with $c_1 = 0 = c_2$ then which of the following is true for $\{\vec{v}_1, \vec{v}_2\}$?

Answer (Please select your correct option)

- It is a linearly independent set.

ans

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- It is a linearly dependent set.
- The system of equations is inconsistent.
- The system of equations is non- homogeneous.

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25

Question No : 26 of 52 **Marks: 1 (Budgeted Time 1 Min)**

Which of the following is true for the linear operator L defined by $L\left(\begin{bmatrix} a_1 \\ a_2 \end{bmatrix}\right) = \begin{bmatrix} a_1 \\ -a_2 \end{bmatrix}$?

Answer (Please select your correct option)

- It is an enlargement by a negative scale factor.
- It is a shear.
- It is a reflection about $X-axis$.
- It is a reflection about $Y-axis$.

ans

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Question No : 27 of 52 **Marks: 1 (Budgeted Time 1 Min)**

If $A = \begin{bmatrix} 4 & -1 \\ 5 & 3 \end{bmatrix}$, then which of the following is the value of $\det(A)$?

Answer (Please select your correct option)

- 7
- -17
- 17
- 11

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4(3)-(-1)(5)= 17

ans

Question No : 28 of 52 **Marks: 1 (Budgeted Time 1 Min)**

If the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 0 & 1 & 2 \\ 0 & 0 & 2 \end{bmatrix}$, then which of the following is true about it ?

Answer (Please select your correct option)

- Its determinant is 0.
- Its determinant is 1.
- Its determinant is 2.

ans

- Its determinant is 4.

Question No : 29 of 52 **Marks: 1 (Budgeted Time 1 Min)**

If the matrix $A = \begin{bmatrix} 1 & 5 & 4 \\ 0 & 1 & 7 \\ 0 & 0 & 0 \end{bmatrix}$, then which of the following is true about it ?

Answer (Please select your correct option)

- Its determinant is 0.

ans

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- Its determinant is 2.
- Its determinant is 4.
- Its determinant is 6.

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29

Question No : 30 of 52 **Marks: 1 (Budgeted Time 1 Min)**

If the determinant of the matrix $A = \begin{bmatrix} 4 & 3 & 5 \\ 3 & 1 & 1 \\ 5 & 7 & 7 \end{bmatrix}$ is 32 and the matrix B is obtained by multiplying any row of A with an integer value 4 , then which of the following is true about the matrix B ?

Answer (Please select your correct option)

- Its determinant is 18 .
- Its determinant is -32 .
- Its determinant is 128 .

i think

- The information is not sufficient to calculate the determinant .

Question No : 31 of 52 **Marks: 1 (Budgeted Time 1 Min)**

If a set W be a subspace of a vector space V, then which of the following is NOT true for it ?

Answer (Please select your correct option)

- It must be closed under the scalar multiplication .
- It may or may not be closed under the operation of addition .
- It must have an additive inverse of each element .
- It must be commutative under the operation of addition .

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ans

Question No : 32 of 52 **Marks: 1 (Budgeted Time 1 Min)**

Let a set S is a basis of a vector space V, then which of the following is NOT true about it ?

Answer (Please select your correct option)

- It spans V.
- It is linearly independent.
- It is linearly dependent.
- Each element of S belongs to V.

ans

Correct answer solved by Hadi
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Question No : 33 of 52 **Marks: 1 (Budgeted Time 1 Min)**

If a set $S = \left\{ \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}, \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} \right\}$ is a basis for R^3 and $[\vec{v}]_S = \begin{bmatrix} 7 \\ 5 \\ 3 \end{bmatrix}$, then which of the following is the most appropriate option ?

Answer (Please select your correct option)

- $\vec{v} = (1, 0, 0)^t \in R^3$
- $\vec{v} = (2, 3, 4)^t \in R^3$
- $\vec{v} = (7, 5, 3)^t \in R^3$
- $\vec{v} = (2, 7, 4)^t \in R^3$

ans

Correct answer solved by Hadi
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Question No : 34 of 52 **Marks: 1 (Budgeted Time 1 Min)**

If P is a polynomial of order 'n', then which of the following is true for the $\dim(P_n)$?

Answer (Please select your correct option)

- $\dim(P_n) = n-1$
- $\dim(P_n) = n$
- $\dim(P_n) = n+1$
- $\dim(P_n) = 1$

Correct answer solved by Hadi
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Start Time: 11:33 PM
119:00
Time Left

34

Question No : 35 of 52 **Marks: 1 (Budgeted Time 1 Min)**

Let $A=\begin{bmatrix} 1 & 3 & 2 & -1 & 5 \\ 2 & 2 & 1 & 1 & 4 \\ -1 & 4 & 1 & 2 & -3 \\ 3 & 5 & 3 & -4 & 2 \end{bmatrix}$, the row space of A is the subspace of R^5 . Identify the set by which the row space of A is spanned ?

Answer (Please select your correct option)

- $\{(1,2,-1,3),(2,4,-2,6),(2,1,1,3),(-1,1,2,-4),(6,3,3,9)\}$
- $\{(1,3,2,-1,5),(2,6,4,-2,10),(-1,4,1,2,-3),(-3,12,3,6,-9)\}$
- $\{(1,3,2,-1,5),(2,2,1,1,4),(-1,4,1,2,-3),(3,5,3,-4,2)\}$
- $\{(1,2,-1,3),(3,2,4,5),(2,1,1,3),(-1,1,2,-4),(5,4,-3,2)\}$

ans

Question No : 36 of 52 **Marks: 1 (Budgeted Time 1 Min)**

If $A = \begin{bmatrix} 1 & 3 \\ 2 & 4 \end{bmatrix}$ and $\vec{x} \in \text{Row}(A)$, then which of the following is the most appropriate option ?

Answer (Please select your correct option)

- $\vec{x} = c_1(1,3) + c_2(2,4)$
- $\vec{x} = c_1(1,2) + c_2(3,4)$
- $\vec{x} = c_1(1,4) + c_2(3,2)$
- $\vec{x} = c_1(2,3) + c_2(4,1)$

ans

Correct answer solved by Hadi
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119:00
Time Left

36

Question No : 37 of 52 **Marks: 1 (Budgeted Time 1 Min)**

Consider the bases for R^2 given by $B=\left\{\vec{b}_1, \vec{b}_2\right\}$ and $C=\left\{\vec{c}_1, \vec{c}_2\right\}$; where $\vec{b}_1=\begin{bmatrix}1\\0\end{bmatrix}, \vec{b}_2=\begin{bmatrix}-1\\1\end{bmatrix}, \vec{c}_1=\begin{bmatrix}-6\\4\end{bmatrix}, \vec{c}_2=\begin{bmatrix}-4\\7\end{bmatrix}$; then which of the following is the change-of-coordinates matrix from C to B?

Answer (Please select your correct option)

- $P_{B\leftarrow C}=\begin{bmatrix}-2 & 3\\4 & 7\end{bmatrix}$
- $P_{B\leftarrow C}=\begin{bmatrix}1 & -1\\0 & 1\end{bmatrix}$
- $P_{B\leftarrow C}=\begin{bmatrix}-6 & -4\\4 & 7\end{bmatrix}$
- $P_{B\leftarrow C}=\begin{bmatrix}-10 & -11\\4 & 7\end{bmatrix}$

ans

Correct answer solved by Hadi
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119:00
Time Left

37

Question No : 38 of 52 **Marks: 1 (Budgeted Time 1 Min)**

If $B = \left\{ \vec{b}_1, \vec{b}_2, \ldots, \vec{b}_n \right\}$ and E is the standard basis $\left\{ e_1, e_2, \ldots, e_n \right\}$ in R^n ; then which of the following is the value of $\left[\vec{b}_1 \right]_E$?

Answer (Please select your correct option)

- E
- $\vec{b}_1 + E$
- $\vec{b}_1$
- $\vec{b}_2$

Start Time: 11:33 PM

119:00

Time Left

38

Question No : 39 of 52 **Marks: 1 (Budgeted Time 1 Min)**

If $\{y_k\} = \{\ldots, 1, 0.7, 0, -0.7, -1, -0.7, 0, 0.7, 1, 0.7, 0, \ldots\}$ and $0.35\,y_{k+2} + 0.6\,y_{k+1} + 0.42\,y_k = z_k$;

$\uparrow$

$k = 0$

then which of the following is the value of z_0 ?

Answer (Please select your correct option)

- 0.840
- 0.049
- −0.770
- − 1.139

ans

Correct answer solved by Hadi
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