Virtual University	MTH501-Linear Algebra (Solved MCS's) **LECTURE FROM** **(23 to 45)**	VU LMS HELP vulmshelp.com
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ALL answers are verified if found any mistake then Correct ACCORDINGLY

1. Which statement about the General Least Square Method is true?

- ❖ 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 make Ax as close possible to the b.
- ❖ This method gives us exact solution of the System.

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

- ❖ $\frac{1}{3}, \frac{2}{3}, \frac{2}{3}, 0$
- ❖ $\frac{1}{3}, \frac{-2}{3}, \frac{2}{3}, 0$
- ❖ $\frac{-1}{3}, \frac{2}{3}, \frac{-2}{3}, 0$
- ❖ $\frac{1}{3}, \frac{-2}{3}, \frac{2}{3}, \frac{1}{3}$

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

(v, u) =

- ❖ 2
- ❖ -2
- ❖ 3
- ❖ -3

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

- ❖ $0, \frac{2}{3}, \frac{2}{3}, \frac{1}{3}$
- ❖ $0, \frac{2}{3}, \frac{2}{3}, \frac{1}{3}$
- ❖ $0, \frac{1}{3}, \frac{2}{3}, \frac{2}{3}$
- ❖ $0, \frac{1}{3}, \frac{2}{3}, \frac{2}{3}$

5. Let I^3 have the Eduction inner product. Then u = (2, 1, 3), V = (1, 7, k) are orthogonal for

- ❖ K=9
- ❖ K= -3
- ❖ K= -9
- ❖ K= 3

6. Let A ben x n Matrix whose entries are real. If is an eigenvalue of A with x a corresponding eigenvector in ^{n} , then

- ❖ $A\bar{x} = \bar{x}$
- ❖ $A\bar{x} = \overline{x}$
- ❖ $A\bar{x} = \bar{x}$
- ❖ $A\bar{x} = \bar{x}$

7. Suppose that A = $\begin{bmatrix} 1.25 & -.75 \\ -.75 & \end{bmatrix}$ has eigenvalues 2 and 0.5. then 0rigin is a

- ❖ Saddle point
- ❖ Repellor

- ❖ Attractor

8. Suppose that A = $\begin{bmatrix} 0.5 & 0.6 \\ -0.3 & 1.4 \end{bmatrix}$ has eigenvalues 0.8 and 1.1. then 0rigin is a

- ❖ Saddle point
- ❖ Repellor
- ❖ Attractor

9. if A is an m x n matrix with linearly independent column vector, then A can be factored as

A= QR

Where Q is an m X n matrix orthonormal column vector ,and R is an n x m.

- ❖ Upper triangular matrix
- ❖ Invertible matrix
- ❖ Invertible lower triangular matrix
- ❖ invertible Upper triangular matrix

10.The matrix equation $A^T A \hat{x} = A^T b$ represent a system of liner equation Commonly referred to as the

- ❖ Normal equation for x
- ❖ Normal equation for X^
- ❖ Normal equation for A
- ❖ Normal equation for b

11. By the best Approximation theorem , the distance from y to W is $\|y - \hat{Y}\|$, where $\hat{Y}$=

- ❖ Projw $Y^{\wedge}$
- ❖ $Proj_w y$

- ❖projy W

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

- ❖True
- ❖False

13. The dominate 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

- ❖$\lambda = 1$
- ❖$\lambda = -3$
- ❖$\lambda = -1$
- ❖$\lambda = 0$

14. A square matrix A I invertible if and only if and only is X = 0 is not an Eigen Value of A

- ❖True
- ❖False

15. A square matrix with orthogonal columns -----------------matrix.

- ❖Is an orthogonal
- ❖May be an orthogonal
- ❖May not be an orthogonal
- ❖Is not an orthogonal

16. if two row are orthogonal , they are -------------- --.

- ❖Linearly independent
- ❖Linearly Dependent

17. if X is orthogonal to both U and V, then must be --------------to u+v.

- ❖ Orthogonal
- ❖ Orthonormal
- ❖ Perpendicular
- ❖ Parallel

18. the given system $\begin{matrix} 2x+3y=3 \\ 6x+9y=7 \end{matrix}$ **has**

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

19. 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?**

- ❖ Eigenvalue 2 has algebraic multiplicity1
- ❖ Eigenvalue of the matrix 1, 2 and -1
- ❖ Characteristic polynomial of the matrix is $(1-\lambda)(2-\lambda)^2(-1-\lambda)$
- ❖ Eigenvalue -1 has multiplicity 1

20 .if A = $\begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$ **is diagonalizable A has 2 district eigenvalues.**

- ❖ True
- ❖ False

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21. A is diagonalizable if $A = PDP^{-1}$where

- ❖ 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
- ❖ D is a invertible matrix and p is any matrix

22.How many trems are there the algebraic expression $8X^2 + \sqrt{9x}$ x $25X^3$?

- ❖ 4
- ❖ 3
- ❖ 2
- ❖ 1

23. if two matrixes are added, then which of following should be true for them?

- ❖ Both must have same order
- ❖ Both must have different order
- ❖ Both must be rectangular
- ❖ Both must be square

24. if a matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 1 & 2 & 3 \\ 6 & 1 & 1 \end{bmatrix}$, then which of the following is true for A ?

- ❖ It is a rectangular matrix
- ❖ It is row matrix
- ❖ It is singular matrix
- ❖ It is scalar matrix

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25. if $\vec v_1, \vec v_2, \vec v_3$ are in R^m then which of the following is equivalent to $[v_1, v_2, v_3]\begin{bmatrix}2\\7\\5\end{bmatrix}$?

- ❖ $2\vec v_1 - 7\vec v_2 + 5\vec v_3$
- ❖ $5\vec v_1 - 7\vec v_2 + 2\vec v_3$
- ❖ $5\vec v_1 + 2\vec v_2 - 7\vec v_3$
- ❖ $2\vec v_1 + 5\vec v_2 - 7\vec v_3$

26. **if $(\vec v_1, \vec v_2, \vec v_3)$ is linearly dependent set and $\vec v_1 = c\vec v_2$ (where 'c'is a scalar), which option is true?**

- ❖ $\vec v_1 \in \text{span}(\vec v_1, \vec v_2)$
- ❖ $\vec v_3 \in \text{span}(\vec v_1, \vec v_2)$
- ❖ $\vec v_2 \in \text{span}(\vec v_1, \vec v_2)$
- ❖ $\vec v_3 \in \text{span}(\vec v_1, \vec v_2)$

27. if $A = \begin{bmatrix}1 & 2 & 3\\0 & 0 & 1\\0 & -1 & 1\end{bmatrix}$, then which of the following is true for the matrix A?

- ❖ It is an invertible matrix
- ❖ It is a singular matrix
- ❖ It is a non – invertible matrix
- ❖ It is a rectangular matrix

28. which of the following is true for the partitioned matrices A = (C D) and B= (E F), where Sub-

matrices C and D have the same size As E and F respectively?

- ❖ A + B =(CE DF)
- ❖ A + B = $\begin{bmatrix} C+E \\ D+F \end{bmatrix}$
- ❖ A + B = $[C+E \quad D+F]$
- ❖ A + B = $\begin{bmatrix} CE \\ DF \end{bmatrix}$

29. If a matrix A is factorized into lower and upper triangular matrices, then which of the following is true for the matrix?

- ❖ It is called an LU- procedure.
- ❖ It is called an LU –decomposition
- ❖ It is called an LU- matrices.
- ❖ It is called an LU- algorithm.

30. 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?

- ❖ Its determinant is 0.
- ❖ Its determinant is 2.
- ❖ Its determinant is 4.
- ❖ Its determinant is 6.

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

- ❖ It is linearly dependent.
- ❖ Each element of S belong to V.

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- It spans V.
- It is linearly independent.

32. if B = $\left\{ \begin{bmatrix} 0 \\ 1 \end{bmatrix}, \begin{bmatrix} 2 \\ 0 \end{bmatrix} \right\}$ for R^2 *and* sn $x^1 \in R^2$ has coordinate vector $[x^r]_B = \begin{bmatrix} 1 \\ 3 \end{bmatrix}$, *then* which of the following is the value of x^1?

- $x^r = \begin{bmatrix} 6 \\ 1 \end{bmatrix}$
- $x^r = \begin{bmatrix} 2 \\ 0 \end{bmatrix}$
- $x^r = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$
- $x^r = \begin{bmatrix} 1 \\ 3 \end{bmatrix}$

33.if a set S={1, x, x^2} is a for p_2 and $[p^1]_s$ = (2, 4, 7) , then which of the following is the most appropriate option?

- $P_2 = 2 - 4x + 7x^2$
- $P_2 = 2 - 4x - 7x^2$
- $P_2 = 2 + 4x + 7x^2$
- $P_2 = 4x + 7x^2$

34. which of the following is the set of standard basis for R^3?

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

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35. Consider the bases for R^3 given by B= { $\vec{b}_1$, $\vec{b}_2$ } and C ={ $\vec{c}_1$, $\vec{c}_2$ }; 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 form B to C?

- ❖ $p_{B\leftarrow c} = \begin{bmatrix}1 & 1\\3 & -2\end{bmatrix}$
- ❖ $p_{B\leftarrow c} = \begin{bmatrix}-5 & -2\\3 & 1\end{bmatrix}$
- ❖ $p_{B\leftarrow c} = \begin{bmatrix}1 & -1\\0 & 1\end{bmatrix}$
- ❖ $p_{B\leftarrow c} = \begin{bmatrix}-8 & -3\\3 & \end{bmatrix}$

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

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

37. if the casorati matrix is not is not invertible , then which of the following is the most appropriate option regarding ding the associated signals?

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

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38. if $\{Y_k\} = \{\ldots, 1, 0.7, 0, -0.7, 0, 0.7, 1, 0.7, 0, \ldots\}$ and $0.35Y_{K+2} + 0.6Y_{K+1} + 0.42Y_K = Z_k$;

K=0

Then which of the following is the value of Z_0?

- 0.840
- 0.049
- -0.770
- -1.139

39.A system of linear equation is said to be homogenous if it can be written in the from--------------

- AX = B
- AX =0

40.if AB = I = BA for matrices A, B and I, where I is an identity matrix , then

- B is Inverse of A
- A is inverse of B
- $A^{(-1)} = B$, $B^{(-1)} = A$
- All of the above

41. A square matrix A is said to be diagonal if A is similar to a matrix

- Column matrix
- Zero matrix
- Diagonal matrix
- None of these

42. Let A be the matrix of order 2X3 and B be the matrix order 3X5, then which of the following is the order of the matrix AB?

- 2x3
- 3x5
- 3x3
- 2x5

43. Let 'Ax = 0' be a homogeneous liner system of 'n' equation and 'n' unknowns. Then, the coefficient matrix 'A' is invertible if and only if this system has ---- solution.

- No
- Trivial
- Non- trivial
- Infinite many

44. If X – 2 is a factor of the characteristic polynomial of matrix C then an eigenvalue of C is.

- 2
- -2
- 1/2
- 0

45.if +2 is a factor of the characteristic polynomial of matrix C. then which of the following is the eigenvalue of C?

- 2
- -2

- 1 / 2
- 0

46. Let A and B be the square matrices. Then A and B are invertible with $B = A^{-1}$ and $A = B^{-1}$ if and only if AB = BA equals to a (an) ----matrix

- Singular
- Square
- Identity
- Rectangular

47.Let V be a five – dimensional vector space . and let S be a subset of V which spans V. Then S

- Must be linearly dependent
- Must be a basis for V
- Must have infinitely many elements
- Must have at most five element.

48.If U + V = U + W then

- V+ W
- V ≠ w
- V = W
- None of the above

49. if one of the eigenvalues of $[A]_{nxn}$ is zero , it implies----------

- The solution to [A][X] =[C] a system of equation is unique
- The determinant of [A] is zero.

- The solution to [A][X]= [0] system of equation is trivial
- The determinant of [A] is nonzero

50.Ie a matrix A has both negative and positive Eigen values , so in this case origin behaves as a------- point

- Saddle
- Critical

51. If ▯ is an eigenvector of A , then every nonzero vector x such that Ax = ▯ x is called an -------- of A corresponding to---

- Eigenvalue. ▯
- Eigenvector. ▯
- Eigenvalue. A
- Eigenvector. A

52. Let A be n x n matrix, then A invertible if and only if

- Det A is not Zero
- Det A is zero

53. The invertible matrix theorem applies only to ---------------matrices.

- Rectangular
- Square
- Identity
- Scalar

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54. A 3x 3 identity matrix have three and ---------- eigenvalues.

- Same
- District

55. An n x n matrix A is said to be diagonalizable if and only if A as n--------- eigenvectors.

- Linearly dependent
- Linearly independent

56. What is Eigen value?

- A vector obtained from the coordinates
- A matrix determined from the algebraic equation
- A scalar associated with a given linear transformation
- It is the inverse of the transform

57. A column replacement operation on A does not change the

- Determinant
- Matrix
- Row
- Column

58. Le a matrix A has both negative and positive eigen values, so in this case origin behaves as a---- point

- Saddle
- Critical

59. A null space is a vector space

- True
- False

60. Each pair of eigenvalue and its corresponding eigenvector provides a solution of the equation X'= Ax which is called

- Eigen solution
- Eigen function

61. If A is invertible and b in R^n be any vector. Then, we must have a matrix A^{-1} b, which is a solution of ---

- A^{-1} ▯=b
- A^2 ▯= b
- A^t ▯= b
- Ax = b

62. What is the maximum possible number of pivots in a 6 x 6 matrix?

- 0
- 2
- 4
- 6

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

- 12
- 9
- 6
- 3

64. The characteristics polynomial of 3 X 3 identity matrix is ------- if x is the eigen values of the given 3 x 3 identity matrix.

- (x - 1)^3
- (x + 1)^3
- X^3
- (1 - x)^3

65. A partitioned matrix 'A' is said to be block diagonal if the matrices on the main diagonal are square and all other position matrices are

- Zero
- Unit
- NonZero Symmetric
- nonzero Skew Symmetric

66. If A is an invertible square matrix then

- $(A^T)^{-1} = (A^{-1})^T$
- $(A^T)^T=(A^{-1})^T$
- $(A^T)^{-1}=(A^{-1})^{-1}$
- None of these

67.A blocked matrix in which block are repeated the down the diagonals of the matrix is called a ----- matrix.

- Blocked Square
- Blocked diagonal- constant
- Blocked identity

- Blocked rectangular

68. Two equivalent vector must have the same initial point.

- True
- False
- May be

69. \lambda is an eigenvalue of a matrix A if and only if the equation (A - \lambdal)x= 0 has a------

- Non- trivial solution
- Trivial solution

70.which of following is the eigenvalue of the matrix?

- 3
- 5
- 3.4
- 3.5

71. the complex conjugate of a vector in C^n is the vector x in C^n whose entries the conjugates of the entries in x

- Real
- Complex

72. Multiplication of a partitioned matrix by a scalar is also computed-------

- Row by Row
- Column by column
- Diagonal by diagonal

- Block by block

73.if the real part the eigenvalue is zero, then the trajectories from ------ around the origin.

- Parabola
- Hyperbola
- Ellipse
- None of these

74. A row interchange --------- the of the determinant.

- Change
- Does not change

75. For any subspace W of a vector space V, which one is not the axiom for subspace. 0 must be in W.

- For all u, v in W and u – v must be in W.
- For all u, v in W and u.v must be in W.
- For any scalar k and u in W then k.u in W.

76. Which one is not the axiom for vector space?

- 0 + u = u
- 0.u = u
- 1.u = u
- u + v = v + u

77. The Gauss-Seidel method is applicable to strictly diagonally dominant matrix.

- TRUE
- FALSE

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78. If a multiple of one row of a square matrix A is added to another row to produce a matrix B, then which of the following condition is true?

- detB = detA
- detB = k detA
- detA detB = 0
- detA detB = detA

79. Which of the following is the volume of the parallelepiped determined by the columns of A where A is a 3 x 3 matrix?

- |det A|
- [A]
- det A
- A^(-1) ,that is inverse of A

80. Determinant of a non-invertible(singular) matrix always

- vanish
- unity
- non zero negative
- non zero positive

81. Rank of a zero matrix of any order is

- zero
- three
- four
- nine

82. can add the matrices of_______________.

► same order

► same number of columns.

► same number of rows

► different orde

83. solving system of equations with iterative method, we stop the process when the entries in two successive iterations are________.

► repeat

► large difference

► different

84. Jacobi's Method is______________converges to solution than Gauss Siedal Method.

► slow

► fast

► better

85. is invertible, then det(A)det(A-1)=1.

► True

► False

86. The determinant of A is the product of the pivots in any echelon form U of A , multiplied by (-1)r , Where r is

► the number of rows of A

► the number of row interchanges made during row reduction from A to U

► the number of rows of U

► the number of row interchanges made during row reduction U to

87. If a system of equations is solved using the Gauss-Seidel method, then which of the following is the most appropriate answer about the matrix M that is derived from the coefficient matrix ?

- All of its entries on the diagonal must be zero.
- All of its entries below the diagonal must be zero.
- All of its entries above the diagonal must be zero
- All of its entries below and above the diagonal must

88. If M is a square matrix having two rows equal then which of the following about the determinant of the matrix is true?

- det (M) is not equal to '1'
- det (M)=1
- det (M) is not equal to '0'
- det (M)=0

89. if both the Jacobi and Gauss-Seidel sequences converge for the solution of Ax=b, for any initial x(0), then which of the following is true about both the solutions?

- No solution
- Unique solution
- Different solutions

90. Let t be any m x n matrix with orthonormal columns and v be any vector then ||t . v || =______.

- || v ||

- | v |
- V
- t . || v ||

91. If the augmented matrices of two linear systems are row equivalent, then the two systems have the same solution set.

- TRUE
- FALSE

92. Every linear transformation is a matrix transformation.

► True
► False

93. All the lines those passes through origin are not the subspace of a plane.

- FALSE
- TURE

94. Why inverse of the matrix A= [1 2] is NOT possible?

- Because it is a square matrix
- Because it is a zero matrix.
- Because it is an identity matrix.
- Because it is a rectangular matrix.

95. Let W = {(1, y) such that y in R}. Is W a vector subspace of plane.

- YES
- NO

96. If a system of equations is solved using the Jacobi's method , then which of the following is the most appropriate answer about the matrix M that is derived from the coefficient matrix ?

- All of its entries on the diagonal must be zero.
- All of its entries above the diagonal must be zero.
- All of its entries below and above the diagonal must
- All of its entries below the diagonal must be zero.

97. How many different permutations are there in the set of integers {1,2,3}?

- 2
- 4
- 6
- 8

98. Which one is the numerical method used for approximation of dominant eigenvalue of a matrix.

► Power method
► Jacobi's method
► Guass Seidal method
► Gram Schmidt process

99. The inverse of an invertible lower triangular matrix is.

► lower triangular matrix

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► upper triangular matrix
► diagonal matrix

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

101. The characteristic polynomial of a 5×5 matrix is,
$\lambda^5 - 4\lambda^4 - 45\lambda^3 = 0$ **the eigenvalues are:**
► 0,-5, 9

► 0,0,0,5,9
► 0,0,0,-5,9 (true)
► 0,0,5,-9

102: A partitioned square matrix 'A' is said to the matrix if the matrices on the main diagonal square and all matrices above the main diagonal are zero.
- Block lower triangular

103: if there is a vector v= (2, 1, 0) then ||v|| is ……..
- 5

104: Each pair of eigenvalue and its corresponding eigenvectors provide a solution of equation.
Eigen function

105: which of the following is true for the matrix

Where M_{11} .M_{22} and M_{33} are square sub – matrices, and O is Zero sub matrix?

It is block upper triangular matrix

106: suppose that real solution y_1 and y_2 of $x^1 = Ax$ from a basis for the two- dimensional real vector space if y_1 and y_2 are ……..

Linearly independent

107: Let W be a subspace of R and (u_1, u_2,…….u_p) is any orthogonal basis of W, then $y = c_1u_1 + c_2u_2 \ldots\ldots\ldots\ldots c_nu_n$ where

$$C_j = \frac{y.u_j}{u_j.u_j}$$

108: Elementary row operation on a matrix do not affect the ….. relation among the column of the matrix

Linear dependence

109: Two vector are ……….. if at least one of the vector is a multiple of the other

Linearly dependent

110: Electric circuit rotation is caused by sine and cosine function if there eigenvalues are complex and hence the origin is called….

Spiral point

111: Multiplication of a partitioned matrix by a scalar is also computed…..

Column by column

112: The invariable Matrix .Theorem applies only to………………

Square

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113:Let A be a real 2 by 2 matrix with complex eign values ▯= a – b + I,(b ▯) and associated eigenvectors vin C^2 then A PCP $^{-1}$ where p= ------

P = [Revlmv]

114: Let Ax = 0 be a homogeneous linear system of 'n' unknown , then the coefficient matrix 'A' is invertable if and only if this system has ------------- solution

Trivial

115: the two vector are said to b equivalent if

Same length and same direction

116: if one of the eigenvalues of $[A]_{nxn}$ is zero .it implies

The determined of [A] is zero

117: let be a five – dimensional vector space. And let ba subset of consisting of five vectors.

Mast be linearly dependent, but may or may not span V

118: Suppose x, y, z are some vectors in an inner product space (v,<,>) such that <X,Y>=<X,Z> for all x ▯ V then Y=Z

TRUE

119: let U,V and W be vectors in R^n ,then

(U+ v), W=U.W+V.W

Q120: if u and v non zero vector in either R^2orR^3 then by the law of cosines || u – vii^2……..

$||u – v||^2 = ||u||^2 + ||v||^2 - 2 ||u||||v||\cos$

121: If u +v – w, then

V = w

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122: Two vectors u and v in R^n are orthogonal if…………….

u.v = o

123:A vector whose length 1 is called ……………..

Unit vector

124: A …………. Matrix whit orthogonal columns is an orthogonal matrix.

Square 1**:**

125: if a square matrix has orthogonal columns then it also has …… rows.

Orthogonal

126: The norm of v is the non-negative scalar ||v|| defined by

$||v|| = \sqrt{V}^2{}_1 + v_2{}^2 + ... v^2{}_n$

127: the matrix A ^ T x A is invertable if and only if the columns of A are linearly independent

True

128: let V be a one Eigen vector then conjugate eigen vector is repented by.

V

129: Any finite dimensional inner product space an orthonormal basis.

True

130: the ………. vector is orthogonal to every vector in R^n.

Zero

131: Each pair of eigenvalue and this its corresponding eigenvector provides a solution of the

equation X^1 = Ax which is called …………….. of the differential equation.

Eigen function

132: if we divide a non – zero vector by its length we get a

Unit vector

133: A matrix A – (n\time n) has both positive and negative eigenvalues so in this case origin behave as a

Saddle point