Tutorial-1

Matrices and Differential equations

1. If 1, 2 , 3 and 5 are the eigen values of the Matrix A of order 4 then the matrix is
2. Non-singular
3. Singular
4. Diagonal
5. Identity
6. If 2, 3 and 5 are the three eigen values of the matrix A of order 3 , then the value of det(A) is
7. 30
8. – 10
9. -30
10. 10
11. If is an eigen value of A, then  is an eigen value of
12. A
13. 
14. 
15. 
16. If is an eigen value of the matrix A, then is the eigen value of
17. 
18. 
19. 
20. 
21. The characteristic equation of the matrix  is
22. 
23. 
24. 
25. d
26. If the sum of the eigen values of the matrix is 5, then the value of k is
27. 0
28. 2
29. -2
30. -1
31. For a given matrix  one of the eigen value is 3. The other two eigen values are
32. 7, -5
33. 3, -5
34. 2, 5
35. 3, 5
36. The matrix  has one eigen value equal to 3. The sum of the other two eigen value is
37. P
38. p-1
39. P-2
40. p-3
41. If  then the eigen values of A are
42. 1, -1
43. 1,1
44. -1, 1
45. 0, 1
46. The three characteristic roots of the matrix are
47. 1,2,3
48. 1,2,2
49. 1, 0,0
50. 0,2,3
51. Which of the following statements is true for all real symmetric matrices

a) All eigen values are real

b) All eigen values are positive

c) All eigen values are distinct

d) Sum of all eigen values is zero

1. The determinant of the matrix 
2. 100
3. 200
4. 1
5. zero
6. For the matrix A =  one of the normalized eigen vectors is given as
7. 
8. 
9. 
10. 
11. For the matrix P =  one of the eigen values is equal to -2. Which of the following is an eigen vector?

a)

b) 

c) 

d)

1. The real symmetric matrix C corresponding to the quadratic form Q = (4 \* x1 \* x2 )– (5 \* x2 ^ 2)

a)

b)

c)

d)

1. Nature of quadratic form  is

a)Positive semidefinite

b)Negative definite

c)Positive definite

d)Negative semidefinite

1. If the canonical form is  then the eigen values of matrix A corresponding to a quadratic form is

a)-1,3

b)-1,0,3

c)-1,1,3

d)-1,-1,3

1. The nature of quadratic form is
2. Negative semi-definite
3. Positive semi-definite
4. Negative definite
5. Indefinite
6. If the canonical form of quadratic form is  rank, index and signature is respectively

a)3,2,1

b)1,2,3

c)3,1,2

d)3,0,1

1. For the matrix  the eigen values are

a)3 and -3 b)-3 and -5 c) 3 and 5 d)5 and 0