Import numpy as np

Q1) Define and print a 6 dimensional vector

Ans) X=np.array([[1,1,1,1,1,1],[2,2,2,2,2,2],[3,3,3,3,3,3],[4,4,4,4,4,4],[5,5,5,5,5,5],[6,6,6,6,6,6]])

Print(x)

Q2) Print the transpose of the above vector

Ans) X=np.array([[1,1,1,1,1,1],[2,2,2,2,2,2],[3,3,3,3,3,3],[4,4,4,4,4,4],[5,5,5,5,5,5],[6,6,6,6,6,6]]).T

Print(X)

Q3) Define two non square matrices such that they can be multiplied.

Ans) A=np.array([[1,2,6],[8,2,9]])

B=np.array([[2,5],[8,1],[2,6]])

Print(a)

Print(b)

Q4) Print the shape of the above matrices

Ans) Print(a.shape)

Print(b.shape)

#Q5) Print the product of above two matrices (do so without using the inbuilt functions).

Ans) Z=np.array([np.zeros(3)]\*3)

For I in range(len(a)):

For j in range(len(b[1])):

For k in range(len(b)):

Z[i][j] += a[i][k] \* b[k][j]

Print(Z)

Q6) Define two non square matrices of same order and print their sum.

Ans) P=np.array([[5,3,9],[9,2,4],[9,4,7]])

Q=np.array([[9,3,6],[5,2,8],[8,1,2]])

Print(P+Q)

Q7) Define a square matrix A.

Ans) A=np.array([[7,3],[9,2]])

Print(A)

Q8) Print the transpose of A.

Ans) Print(A.T)

Q9) Print the identity matrix of the above order I.

Ans) I=np.array([[1,0],[0,1]])

Print(I)

Q10) Verify A.I = I.A for matrix multiplication.

Ans) X=A@I

Print(“A.I = “,X)

Y=I@A

Print(“I.A = “,Y)

Print(“ Therefore, A.I = I.A”)

Q11) Define another square matrix of the same order as A.

Ans) M=np.array([[4,1],[7,2]])

Print(m)

Q12) Print the product of the matrices as matrix multiplication

Ans) Print(A@m)

Q13) Print the product of the matrices by element wise multiplication

Ans) Print(np.multiply(A,m))

Q14) Calculate and print the inverse of A.

Ans) c=np.linalg.det(A)

Print(“The determinant of A is”,c)

If c!=0:

Print(“The inverse is “,np.linalg.inv(A))

Else:

Print(“Inverse does not exist”)