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**NPTEL** (<https://swayam.gov.in/explorer?ncCode=NPTEL>) » **Data Science for Engineers (course)**



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Course  
outline

How does an  
NPTEL  
online  
course  
work?

Setup Guide

Pre Course  
Material

Week 0

Week 1

Week 2

## Week 2: Assignment 2

The due date for submitting this assignment has passed.

**Due on 2021-08-18, 23:59 IST.**

**Assignment submitted on 2021-08-17,  
12:05 IST**

Consider a data matrix, 'M' which comprises the information of 150 cricket players which includes player's jersey number, number of matches played, total runs, average, highest score, number of 100's, and number of 50's.

Using the above information answer the questions 1 & 2

1) What would be the size of the matrix 'M'?

**1 point**

- ☐ 7x150
- ☒ 150x7
- ☐ 150x8
- ☐ 700x7

Yes, the answer is correct.

Score: 1

Accepted Answers:

- 150x7
- 2) Rank of the matrix 'M' is 3 then what would be the nullity (number of equations) for the matrix 'M'? **1 point**
- ☐ 7
- ☐ 2.5
- ☒ 4
- ☐ 3
- Yes, the answer is correct.  
Score: 1
- Accepted Answers:  
4
- 3) Rank of the matrix,  $A = \begin{bmatrix} 1 & 4 & 3 & 5 & 6 \\ 2 & 5 & 0 & 5 & 1 \\ 8 & 6 & 5 & 1 & 0 \\ 2 & 8 & 6 & 10 & 12 \\ 9 & 7 & 6 & 5 & 1 \end{bmatrix}$  is \_\_\_\_\_
- 4
- Yes, the answer is correct.  
Score: 1
- Accepted Answers:  
(Type: Numeric) 4
- 1 point**
- Consider the given matrix,  $D = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix}$  and answer the questions 4 & 5
- 4) Eigen values of the given matrix D is **1 point**
- ☐ 0,1,2
- ☒ 3,2,1
- ☐ 2,3,0
- ☐ None of the above
- Yes, the answer is correct.  
Score: 1
- Accepted Answers:  
3,2,1
- 5) Eigen vectors of the given matrix D is **1 point**

## Halfspaces, Eigenvalues, Eigenvectors

(  
Continued  
3 ) (unit?  
unit=37&lesson=44)

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

Common  
doubts  
asked on  
Linear  
Algebra  
(unit?  
unit=37&lesson=45)

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

Practice:  
Week 2:  
Assignment  
2 (Non  
Graded)  
(assessment?  
name=121)

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

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

Quiz:  
Week 2:  
Assignment  
2  
(assessment?  
name=129)

Yes, the answer is correct.  
Score: 1

Accepted Answers:

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

Week 2  
Feedback  
Form: Data  
Science for  
Engineers  
(unit?  
unit=37&lesson=46)

6) The product of roots of characteristic equation of a square matrix  $A$  is **1 point**  
equal to

- ☒  $|A|$   
☐ Rank of  $A$   
☐  $A^{-1}$   
☐ None of the above

Yes, the answer is correct.  
Score: 1

Accepted Answers:

$$|A|$$

## Week 3

## Week 4

## Week 5

Download  
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7) Which of the following vector(s) is / are orthogonal?

**1 point**

- ☐  $V_1 = (1 \ 8 \ 4)^T, V_2 = (6 \ 7 \ -8)^T$   
☒  $V_1 = (1 \ 4 \ -2)^T, V_2 = (12 \ -2 \ 2)^T$   
☐  $V_1 = (6 \ 4 \ -2)^T, V_2 = (1 \ 4 \ -1)^T$   
☒  $V_1 = (-2 \ 6 \ 1)^T, V_2 = (4 \ 1 \ 2)^T$

Yes, the answer is correct.  
Score: 1

Accepted Answers:

$$V1 = (1 \ 4 \ -2)^T, V2 = (12 \ -2 \ 2)^T$$

$$V1 = (-2 \ 6 \ 1)^T, V2 = (4 \ 1 \ 2)^T$$

8) If  $A$  and  $B$  are any two square matrices of SAME dimensions such that  $AB = 0$  and if  $A$  is non-singular, then **1 point**

- ☒  $B=0$   
☐  $B$  is singular  
☐  $B$  is non-singular  
☐  $B=A$

Yes, the answer is correct.

Score: 1

Accepted Answers:

$$B=0$$

9) The point  $\begin{pmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{pmatrix} = \begin{pmatrix} 1 \\ 4 \\ 6 \\ 3 \end{pmatrix}$  is in \_\_\_\_\_ half space of the hyperplane  $x_1 - 9x_2 + 3x_3 + 2x_4 = 8$  **1 point**

- ☐ Positive  
☒ Negative  
☐ On a plane  
☐ Cannot be determined

Yes, the answer is correct.

Score: 1

Accepted Answers:

Negative

10) The trace of a matrix  $A$  can be found by **1 point**

- ☐ Sum of its eigenvalues  
☒ Sum of its diagonals  
☐ Determinant  
☐ None of the above

Partially Correct.

Score: 0.5

Accepted Answers:

Sum of its eigenvalues

Sum of its diagonals

