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NPTEL

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Courses » Engineering Mathematics - I

Announcements

Course

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Unit 10 - Week 8 :

Register for Certification
exam

Course outline

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 Lecture 36 : System
of Linear Equations

 Lecture 37 : System
of Linear Equations
–Gauss Elimination

 Lecture 38 : System
of Linear Equations
–Gauss Elimination
(Cont.)

 Lecture 39 : Linear
Algebra - Vector
Spaces

 Lecture 40 : Linear
Independence of
Vectors

 Quiz : Assignment 8

 Feedback for Week 8

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Assignment 8

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-03-27, 23:59 IST

1) Which of the following options hold(s) true for the system of linear equations 1 point

$$x_1 - x_2 - x_3 = 0$$

$$x_2 + 3x_3 = -1$$

$$5x_1 + 4x_3 = 1$$

- a. Unique solution exists
b. Infinite number of solutions exist
c. No solution exists
d. unique solution is $x_1 = 1, x_2 = 2, x_3 = -1$

- a.
 b.
 c.
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

- a.
d.

2) Which of the following options hold(s) true for the system of linear equations 1 point

$$x_1 + 3x_2 + 4x_3 = 8$$

$$x_1 - x_2 = 4$$

$$3x_1 + x_2 + 4x_3 = 16$$

- a. Unique solution exists
b. Infinite number of solutions exist
c. No solution exists
d. unique solution is $x_1 = 1, x_2 = -3, x_3 = 4$

- a.
 b.
 c.
 d.

No, the answer is incorrect.

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For the system of linear equations

$$\begin{aligned} 3x_1 + 2x_2 + x_3 &= 2 \\ -x_1 + 3x_2 - 13x_3 &= -6 \\ x_2 + 3x_3 &= 5, \end{aligned}$$

the value of $2x_1 + x_2 + x_3$ is

- a. 0
- b. 1
- c. 2
- d. 3

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

b.

4) Which of the following options hold(s) true for the system of linear equations 1 point

$$\begin{aligned} x_1 + x_2 + 3x_3 + x_4 &= 2 \\ 3x_1 + 2x_2 - x_3 - x_4 &= -1 \\ x_1 + x_3 - 2x_4 &= -3 \\ 3x_1 + 3x_2 + x_3 + 2x_4 &= \beta \end{aligned}$$

- a. Number of pivots = 2
- b. For $\beta \neq 4$ no solution exist
- c. For $\beta = 4$ unique solution exists
- d. Number of free variable = 1

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

b.

d.

5) 1 point

Let $V = \{(x_1, x_2) \in \mathbb{R}^2 : x_1 + x_2 = 1, 0 \leq x_1 \leq 1, 0 \leq x_2 \leq 1\}$, with the binary operation $(x_1, x_2) + (y_1, y_2) = \left(\frac{x_1+y_1}{2}, \frac{x_2+y_2}{2}\right)$ and $r(x_1, x_2) = (rx_1, rx_2)$, for $r \in \mathbb{R}$ and $(x_1, x_2), (y_1, y_2) \in V$. Then $(V, +, \cdot)$ forms a vector space over \mathbb{R} .

Check whether the above statement is true or false.

- a. True
- b. False

- a.
- b.

No, the answer is incorrect.

Score: 0

Accepted Answers:

b.

6) The set $S = \{A \in M_{n \times n} : \det(A) = 0\}$ is a subspace of $M_{n \times n}$.

1 point

Check whether the above statement is true or false.

- a. True
- b. False

- a.
- b.

No, the answer is incorrect.

Score: 0

Accepted Answers:

b.

7)

1 point

If $S = \{f \in C[0,1] : \int_0^1 f(x) dx = \beta, \beta \in \mathbb{R}\}$ is a subspace of $C[0,1]$, i.e., the vector space of all continuous functions in the interval $[0,1]$, then the value of β is

- a. 0
- b. 1
- c. -1
- d. -2

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

a.

8)

1 point

Which of the following options is/are true for the polynomials $p_1 = 2 + 2x + 3x^2$, $p_2 = 2 + x + 4x^2$, $p_3 = 1 - x + 3x^2$ and $p_4 = 3 + 2x + 5x^2$?

- a. p_1 is a linear combination of p_2, p_3 and p_4
- b. p_1 is a linear combination of p_2 and p_4
- c. p_3 is a linear combination of p_1, p_2 and p_4
- d. p_3 is a linear combination of p_1 and p_4

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

a.

c.

9) The set $S = \{1, x, x^2, x^3\}$ is a linearly independent set in $P_3(x)$.

1 point

Check whether the above statement is true or false.

- a. True
- b. False

- a.
- b.

No, the answer is incorrect.

Score: 0

Accepted Answers:

a.

10)

1 point

If the set $S = \{(1, -2, \lambda), (2, -1, 5), (3, -5, 7\lambda)\}$ is linearly dependent, then the value of λ is

- a. 0
- b. $\frac{5}{7}$
- c. $\frac{5}{14}$
- d. $\frac{3}{14}$

- a.
- b.
- c.
- d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

c.

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