

Unit 2 - Week 0: Pre-requisite Assignment

Course outline
How does an NPTEL online course work?
Week 0: Pre-requisite Assignment
Quiz : Assignment 0
Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Week 7
Week 8
Week 9
Week 10
Week 11
Week 12
Live session
VIDEO DOWNLOAD

Assignment 0

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

Due on 2020-09-14, 23:59 IST.

1) Let $M = \begin{bmatrix} 1 & -2 \\ 2 & 5 \end{bmatrix}$ be a 2×2 matrix. Then $\det(M)$ equals

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 8,9,9,1

1 point

2) Let $M = \begin{bmatrix} 1 & -2 \\ 2 & 5 \end{bmatrix}$ be a 2×2 matrix. If $M^{-1} = \frac{1}{9} \begin{bmatrix} 5 & 2 \\ \alpha & 1 \end{bmatrix}$ then the value of $|\alpha|$ equals

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 1,9,2,1

1 point

3) Consider the two linear systems $S_1 := \{x + y = 2, 2x + 3y = 5\}$ and $S_2 := \{2x + 3y = 5, 6x + 9y = 8\}$. Then

- S_1 has a unique solution and S_2 has infinitely many solutions.
- Both S_1 and S_2 have infinitely many solutions.
- Both S_1 and S_2 have unique solution.
- S_1 has a unique solution but S_2 has NO solution.

No, the answer is incorrect.
Score: 0
Accepted Answers:
 S_1 has a unique solution but S_2 has NO solution.

1 point

4) Consider the vectors $\mathbf{x} = \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$ and $\mathbf{y} = \begin{bmatrix} 1 \\ -1 \\ 0 \end{bmatrix}$. If $\mathbf{x} + \mathbf{y} = \begin{bmatrix} \alpha \\ 0 \\ 1 \end{bmatrix}$ then the value of α equals ...

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 1,9,2,1

1 point

5) Consider the vectors $\mathbf{x} = \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$ and $\mathbf{y} = \begin{bmatrix} 1 \\ -1 \\ 0 \end{bmatrix}$. If θ is the angle between the vectors \mathbf{x} and \mathbf{y} then the value of $2\sqrt{6} \cos \theta$ equals

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 1,9,2,1

1 point

6) Consider the polynomials $f(x) = 4x^3 - 6x - 1$ and $g(x) = 4x^3 - 6x - 5$. Then, which among the following is a CORRECT Option?

- Both $f(x)$ and $g(x)$ have exactly 3 real roots.
- Both $f(x)$ and $g(x)$ have exactly 1 real root.
- $f(x)$ has exactly 3 real roots but $g(x)$ has exactly 1 real root.
- $f(x)$ has exactly 1 real root but $g(x)$ has exactly 3 real roots.

No, the answer is incorrect.
Score: 0
Accepted Answers:
 $f(x)$ has exactly 3 real roots but $g(x)$ has exactly 1 real root.

1 point

7) The curve $x^2 + y^2 + 10x + 12y + 52 = 0$ represents a circle with

- centre at (5, 6) and radius 3.
- centre at (5, 6) and radius 9.
- centre at (-5, -6) and radius 9.
- centre at (-5, -6) and radius 3.

No, the answer is incorrect.
Score: 0
Accepted Answers:
centre at (-5, -6) and radius 3.

1 point

8) The curve $xy = c$ represents

- a hyperbola if $c = 0$.
- a hyperbola with the curves in 2-nd and 4-th quadrants if $c < 0$.
- a pair of straight lines if $c \neq 0$.
- a hyperbola with the curves in 2-nd and 4-th quadrants if $c > 0$.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a hyperbola with the curves in 2-nd and 4-th quadrants if $c < 0$.

1 point

9) Let $x = \frac{1}{1 + \sqrt{2} + \sqrt{3}}$ and $y = 2 + \sqrt{2} - \sqrt{6}$. Then

- The denominator of $\frac{x}{y}$ has irrationals.
- the denominator of $\frac{x}{y}$ equals 6.
- the denominator of $\frac{x}{y}$ equals 4.
- the denominator of $x \cdot y$ contains only rational.

No, the answer is incorrect.
Score: 0
Accepted Answers:
the denominator of $\frac{x}{y}$ equals 4.

1 point

10) Let $a \in S = \{1, 2, 3, \dots, 6\}$. Then, which among the following is an INCORRECT Option?

- There exists $b \in S$ such that when we divide $a \cdot b$ by 7 then the remainder is 0.
- There exists $b \in S$ such that when we divide $a \cdot b$ by 7 then the remainder is 2.
- There exists $b \in S$ such that when we divide $a \cdot b$ by 7 then the remainder is 3.
- There exists $b \in S$ such that when we divide $a \cdot b$ by 7 then the remainder is 5.

No, the answer is incorrect.
Score: 0
Accepted Answers:
There exists $b \in S$ such that when we divide $a \cdot b$ by 7 then the remainder is 0.

1 point

11) Let $|x| < 1$. Then $1 - x + x^2 - x^3 + \dots + (-1)^n x^n$ equals

- $\frac{x^{n+1} - 1}{x - 1}$.
- $\frac{1 - (-x)^{n+1}}{x - 1}$.
- $\frac{1 - (-x)^{n+1}}{1 + x}$.
- $\frac{1 - (-x)^{n+1}}{1 - x}$.

No, the answer is incorrect.
Score: 0
Accepted Answers:
 $\frac{1 - (-x)^{n+1}}{1 + x}$.

1 point