MTH100 midterm

dtQ
Which of the following is Arithmetic Sequence?

a) $x+a\ ,\ x+3a\ ,\ x+5a\ ,...$

b) $(x+a)+\ (x+3a)+\ (x+5a)+...$

c) $(x+a)\ ,\ 2(x+3a)\ ,\ 4(x+5a)\ ,...$

d) $(x+a)+\ 2(x+3a)+\ 4(x+5a)+...$

e) Ans:aaa

Q

$$\begin{bmatrix} 9 & -2 & 4 \\ 5 & 0 & 6 \\ 1 & 3 & 8 \end{bmatrix} - \begin{bmatrix} 4 & 0 & 7 \\ 1 & 5 & -4 \\ -2 & 3 & 2 \end{bmatrix}$$

=

1) $\begin{bmatrix} 5 & -2 & -3 \\ 4 & -5 & 10 \\ 3 & 0 & 6 \end{bmatrix}$

2) $\begin{bmatrix} 5 & 2 & -3 \\ 4 & -5 & 10 \\ 3 & 0 & 6 \end{bmatrix}$

3) $\begin{bmatrix} 5 & -2 & -3 \\ 4 & 5 & 10 \\ 3 & 0 & 6 \end{bmatrix}$

4) ans1111

Q
A line AB has coordinates as A (5, 8) and B (3, 6). The midpoint of AB has coordinates bbbb

a) (1, 1)
b) (4, 7)
c) (6.5, 4.5)

d) (-1.5,-1.5)

Q4

Let $z_1 = 3-5i$ and $z_2 = -4-2i$ be two complex numbers, then which of the following is the value of $z_1 \cdot z_2$?

a) $-22+14i$
b) $-12+10i$
c) $-6+20i$
d) $14-22i$
e) Ans bbb

Q

Let $z_1 = 2+3i$ and $z_2 = 5+9i$ be two complex numbers, then which of the following is the value of $z_1 + z_2$?

a) $7-12i$
b) $7+12i$
c) $10+27i$
d) $18+15i$
e) Ans bbbb

Q

What is roster method to show the set $A = \{x \mid x \in Z \wedge -3 < x \leq 3\}$?

a) $A = \{-3,-2,-1,0,\ 1,\ 2,\ 3\}$
b) $A = \{-2,-1,0,\ 1,\ 2,\ 3\}$
c) $A = \{-3,-2,-1,0,\ 1,\ 2\}$
d) $A = \{-3,-2,-1,\ 1,\ 2,\ 3\}$
e) bbb

Q

5.45235452365845125… is a/an

a) rational number
b) irrational number
c) integer
d) natural number
e) bbbb

Q

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$$A=\begin{bmatrix} -1 & 2 \\ -3 & -4 \end{bmatrix}$$

Determinant of is

a) 12
b) 10
c) 14
d) 8
e) bbbb

Q

$$A=\begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix}$$

Let

The Minor of a_{23} is

a) $\begin{vmatrix} a_{12} & a_{22} \\ a_{31} & a_{32} \end{vmatrix}$

b) $\begin{vmatrix} a_{11} & a_{12} \\ a_{31} & a_{32} \end{vmatrix}$

c) $\begin{vmatrix} a_{11} & a_{12} \\ a_{31} & a_{23} \end{vmatrix}$

d) $\begin{vmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{vmatrix}$

bbbbb

Q

$$a_n = a+(n-1)d$$

For an arithmetic sequence , which of the following is the best option for '***d***' ?

a) First term
b) Last term
c) Constant
d) Common difference

e) ddd

Q

Which of the following is the common ratio '***r***' of an geometric sequence 5, 10, 20, 40, **...**?

a) -5

b) $\frac{1}{2}$

c) 2

d) 5

e) ccccc

Q

If $f(x) = 2x + 1$, $g(x) = x^2 - 1$ then $f \circ g(x) =$

a) $2x^2$

b) $2x^2 - 1$

c) $2x^2 + 1$

d) $2x - 1$

e) bbb

Q

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

For , there will be exactly one real root if

a) $b^2 - 4ac > 0$

b) $b^2 - 4ac \leq 0$

c) $b^2 - 4ac = 0$

d) $b^2 - 4ac > 0$

e) cccc

Q

If A is a matrix whose determinant is zero then its inverse .....

a) will be zero
b) cannot be determined
c) will be negative
d) will be positive

Q

Which of the following is true for the list 2 + 4 + 6 + 8 + 10 ?

a) This is an arithmetic sequence.
b) This is a geometric sequence.
c) This is an arithmetic series.

d) This is a geometric series.
e) cccc

Q
A Square matrix with ones on the diagonal and zeros elsewhere is called an **.....ddd....** matrix

a) rectangular
b) adjoint
c) determinant
d) identity

Q
If the order does matter in a set of objects, it is a _____.

a) sequence
b) combination
c) permutation
d) sample
e) cccc

Q
The Minor of an element in a third-order determinant is a ....bb..... determinant obtained by deleting the row and column that contains the element.

a) third order
b) second order
c) fourth order
d) fifth order

Q

$$A = 2\begin{bmatrix} -2 & 0 & 1 \\ 4 & -1 & 3 \end{bmatrix}$$

Consider be a scalar matrix then which of the following is the dimension of the matrix A ?ddd

a) 3 x 2
b) 2 x 1
c) 2 x 2
d) 2 x 3

Q
Which of these equations has two roots?

a) Quadratic
b) Linear
c) Cubic
d) None of these
e) aaa

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Q

If $C_n = n(n+1)$ for all integers $n \geq 2$, then which of the following is the first three terms of a sequence?

a) 0 , 2 , 6 , ...
b) 2 , 6 , 12 , ...
c) 6 , 12 , 20 , ...
d) 12 , 20 , 30 , ...
e) ccc

Q

If a sequence of numbers approaches to a finite number, then which of the following is true?

a) The sequence is infinite
b) The sequence is divergent.
c) The sequence is convergent.
d) None of them is true.
e) cccc

Q

A function of the type $y = ax^2 + bx + c$ where a, b and c are real coefficients, is called a

cccc

a) Quadratic function
b) Linear Function
c) Constant function
d) Cubic Function

Q

If the slopes of two lines are same then these lines are

a) Parallel
b) Perpendicular
c) Not parallel
d) None of these
e) aaa

Q

Determine the inverse of the function $f(x) = 4x^2 - 4$.

a) $f^{-1}(x) = \frac{\sqrt{x+4}}{4}$

b) $f^{-1}(x) = \frac{\sqrt{x-4}}{4}$

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c) $f^{-1}(x)=\frac{\sqrt{x+4}}{2}$

d) $f^{-1}(x)=\frac{\sqrt{x-4}}{2}$

e) bbb

Q

If $A=\{2,4,6,8,10,12,14,16\}$ and $B=\{12,13,14,15,16\}$

Then $A\cup B$ is

a) $A\cup B=\{2,4,6,8,10,12,13,14,15,16\}$

b) $A\cup B=\{12,13,14,15,16\}$

c) $A\cup B=\{12,14,16\}$

d) $A\cup B=\{2,4,6,8,10,12,14,16\}$

e) aaa

Q

5.45235452365845125… is a/an

a) rational number
b) irrational number
c) integer
d) natural number
e) bbb

Q

The inverse of the non-singular matrix A can be found by the formula

a) $A^{-1}=Aadj(A)$

b) $A^{-1}=\frac{1}{A}adj(A)$

c) $A^{-1}=\frac{1}{|A|}adj(A)$

d) $A^{-1}=\frac{1}{|A^{-1}|}adj(A)$

e) ccc

Q

Which of the following is identity matrix

a) $I = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$

b) $I = \begin{bmatrix} 1 & 0 \\ 0 & 0 \end{bmatrix}$

c) $I = \begin{bmatrix} 0 & 0 \\ 0 & 1 \end{bmatrix}$

d) $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

e) ddd

Q

Let $z_1 = (3+5i)$ and $z_2 = (-9-6i)$ be two complex numbers, then which of the following is the value of $z_1 + z_2$?

a) -6-*i*
b) -6+*i*
c) 6-*i*
d) 6+*i*
e) *aaaa*

Q

A sequence, in which each term after the first is found by multiplying the previous term by a constant value, is called a (an) **_____.**

a) Arithmetic series
b) Arithmetic progression
c) Geometric series
d) Geometric progression
e) dddd

Q

Which of these relations is function?

a) One-many relation
b) Many-one relation
c) Many-many relation
d) None of these
e) bbbb

Q

The range of $f(x) = (x-2)^2 + 3$ is…aaaa…..

a) $f(x) > 3$
b) $f(x) < 3$
c) $f(x) \leq 3$
d) $f(x) \geq 3$

Q

If a scalar k is multiplied with the matrix then which one of the following statement is correct?

a) k will be multiplied with all elements of the matrix
b) k will be multiplied with first column in the matrix
c) k will be multiplied with first row in the matrix
d) k will be multiplied with the diagonal elements
e) aaa

Q

Let '*a*' be the first term and '*d*' be the common difference of an arithmetic series . Then which of the following is the sum (S_n) of the first '*n*' terms of an arithmetic series?

a) $a+(n-1)d$
b) $2a+(n-1)d$
c) $\frac{n}{2}[a+(n-1)d]$
d) $\frac{n}{2}[2a+(n-1)d]$
e) dddd

Q

A Square matrix with ones on the diagonal and zeros elsewhere is called an **....dddd.....** matrix
rectangular

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adjoint
determinant
identity
Q

Which of the following is true for ${}^{n}C_{r}$?

a) ${}^{n}C_{r} = \frac{{}^{n}P_{r}}{r!}$

b) ${}^{n}C_{r} = \frac{{}^{n}P_{r}}{(n-r)!}$

c) ${}^{n}C_{r} = \frac{{}^{n}P_{r}}{(n-r)!r!}$

d) ${}^{n}C_{r} = {}^{n}P_{r}\ (n-r)!$

e) aaaa

Q

$\det\begin{bmatrix} -1 & 2 \\ -3 & -4 \end{bmatrix} = ...$

a) -10
b) 10
c) -2
d) +2
e) bbb

Q

An Arithmetic Sequence is a sequence in which each term after the first term is found by .aaa……. a constant called common difference.

a) Adding
b) Subtracting
c) Dividing
d) Multiplying

Q

To multiply a matrix by a scalar, we multiply each _cc_____ in the matrix by that scalar.

a) Row
b) Column
c) Entry
d) Vector

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Q

Write the domain and range of $f(x) = 5x + 2$

Q

List all the missing terms in the arithmetic series: 7 + 12 + 17 +…+ 37.

Q

Solve the equation $x^2 + 6x + 5 = 0$ by factorization method.

Q

There are five juniors and three seniors in the Service Club.The club is to send four representatives to the State Conference. If the members of the club decide to send two juniors and two seniors, how many different groupings are possible?

Q

$$A = \begin{bmatrix} 1 & 2 & 1 \\ 2 & 1 & 2 \\ 0 & 0 & 1 \end{bmatrix}, I = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

If then find $A^2 - 5I$.

Q

Find the 10th term of the geometric sequence with $a = 3000$ and a common ratio $r = \frac{1}{2}$.

Q

Let $f(x) = 3x + 1$ and $g(x) = 2x + 3$. Find the product of f & g *i.e* $(f.g)(x)$.

Q

If $a_0 = 2,\ a_1 = 3,\ a_2 = -2,$ and $a_3 = 1$, then compute the summation: $\sum_{i=0}^{2} 2a_i$?

Q

The local Family Restaurant has a daily breakfast special in which the customer may choose one item from each of the following groups:

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Breakfast Sandwich	Accompaniments	Juice
egg and chicken egg and beef egg and cheese	breakfast potatoes apple slices fresh fruit cup pastry	orange cranberry tomato apple grape

How many different breakfast specials are possible?

Q

$$A=\begin{bmatrix}1 & 2 & 1\\ 2 & 1 & 2\\ 3 & 1 & 3\end{bmatrix} \qquad B=\begin{bmatrix}2 & 2 & 3\\ 2 & 1 & 1\end{bmatrix}$$

Check whether the matrix and can be multiplied?Justify your answer.

Q

Solve the following system of equations:

$2x_1 + x_2 + 3x_3 = 11$

$4x_1 - x_2 + 2x_3 = 5$

$3x_2 + 2x_3 = 13$