# J15 EDUCATIONAL CONSULTS

***MOTTO: BRINGING KNOWLEDGE TO YOUR DOORSTEP***

***TEL: 07013644096, 09057133772***


## MTH105 SUMMARY

Calculate the distance between the points: A(0,1) and B(6,9)
**10**

Find the magnitude of the vector: \[5i-12j\]
**13**

The addition of two vectors is defined by the
**triangular rule**

The absolute value of a vector is
**that positive number which is a measure of the length of the directed segment**

A vector, PQ drawn from a fixed point P which gives the displacement of the point Q from the point P is called
**Position Vector**

The inverse of a matrix A is given by
**\[A^{-1}=\frac{1}{|A|}Adj A\]**

Quantity having magnitude only but no direction is called
**scalar**

A physical quantity having magnitude and direction is known as
**vector**

For what value of k would the matrix \[\begin{bmatrix}2k+1&5\\4&6\end{bmatrix}\] be singular?
**2**

Let \[A=\begin{bmatrix}1&4\\3&1\end{bmatrix}\] and \[B=\begin{bmatrix}3&1\\2&k\end{bmatrix}\] Given that |AB| =121, find the value of k
**-3**

Let\[A=\begin{bmatrix}1&4\\3&1\end{bmatrix} \] and \[B=\begin{bmatrix}3&1\\2&k\end{bmatrix}\] evaluate |AB|
**22-33k**

What is the cofactor of element '-2' in \[\begin{bmatrix}2&-4&1\\-2&5&0\\3&-3&4\end{bmatrix}\]
**13**

What is the cofactor of element '-3' in \[\begin{bmatrix}2&-4&1\\-2&5&0\\3&-3&4\end{bmatrix}\]
**2**

Let \[A=\begin{bmatrix}x&2&b\\2&3&4\\b&4&y\end{bmatrix}\], then A is
**Symmetric matric**

Find the determinant of \[\begin{bmatrix}3&2&1\\-2&5&0\\3&-1&4\end{bmatrix}\]
**63**

If the inverse of matrix B exists, then it is
**unique**

The transpose of the cofactor matrix of a square matrix B is called the of B
**adjoint**

Determinant is a number associated with Matrices
**square**

A square matrix is called .... if all the elements above the main diagonal vanish
**lower triangular**

Two matrices A and B are said to be conformable for multiplication if
**the number of columns of A is same as the number of rows in B**

Two matrices are said to be equal
**equal if their corresponding elements are the same**

Any matrix of dimension (m x n) with all its elements equal to zero is called . Matrix
**Void**

A matrix same as its transpose is
**symmetric**

A diagonal matrix having all its diagonal element as one (1) is
**identity**

A matrix having the same number of rows and columns is referred to as Matrix
**square**

A rectangular array of numbers with reference to specific rules governing the array is known as
**Matrix**

The number of rows and the number of columns of a matrix determine its
**all of the options**

One of the following has truth value 'False"
**Ijebu-Ode is in Ogun State if and only if 4+3 = 6**

One of the following is not a connective in Logic
**Disjointion**

The True value of Bi-conditional statement would be true
**if the two statements have the same Truth Value**

Let p and q be two simple statements , then the following are conditional statements except
**p if and only if q**

All but one of the statements have truth value true
**Ibadan is the capital of Oyo State or 4 + 3 = 6**

statement is the use of connectives to combine two or more simple statements to form just one
**Composite**

occurs when the conjunction of a set of simple mathematical statements gives rise to another

mathematical statement
**Argument**

Expressions, phrases or symbols that are made used of, to join two or more simple statements together in order to form a compound statement are called
**Connectives**

A declarative sentences or an expression of words which are either true or false, but cannot be both is called
**Proposition**

One of these does not explain the objectives of logical reasoning
**It could be used to decode equivalent only**

The Truth value of the statement 'Ijebu-Ode is in Lagos State' is
**False**

The study and analysis of a mathematical proposition as to ascertain the Truth Value of the proposition is known as
**Logic**

_____ is the science of numbers and shape.

**Mathematics**

_____is the science of reasoning or explaining events

**Logic**

_____is the study and analysis of a mathematical proposition as to ascertain the Truth Value of the proposition.

**Logic**

Given that 2 + 3 = 4, the Truth Value of this statement is _____

**false**

_____ is the science of numbers and shape.

**Mathematics**

_____is the science of reasoning or explaining events

**Logic**

_____is the study and analysis of a mathematical proposition as to ascertain the Truth Value of the proposition.

**Logic**

Given that 2 + 3 = 4, the Truth Value of this statement is _____

**false**

Lagos is a cosmopolitan state. The Truth Value of this is_____

**\(true\)**

_____ is used to analyze the Truth Value of any mathematical statement**.**

**Truth Value Table**

A statement or (proposition) in the context of logic is _____

**a declarative sentences or an expression of words which are either true or false, but cannot assume both.**

The connective "\(\Rightarrow\) in logic is a _____

**conditional**

The connective "\(\Lightrightarrow\) in logic is a **_____**

**bi Ð´Ñƒ•Ñ• implication**

_____ is said to be formed when the conjunction of a set of simple mathematical statements gives rise to another mathematical statement.

**An argument**

What is the common difference in the sequence 3, 5, 7, 9, 11Ð´Ñƒ_

**2**

Evaluate \(\|\frac{z_{1} = 3 + 2i }{z_{2} = 4 + 3i}\|\)

**3.59**

What is the distance between the points \(z_{1}\) and \(z_{2}\), given that \(z_{1} = 3 + 2i and \(z_{2} = 4 + 3i\)?

**2**

Find the unit vectors in the direction of the vector \( a=4i+3j|).

**5**

Given that \( r_{1 }= 3i + 5 j\) , \(r_{2} = Ð´Ñ™Ð•4i +19 j\). Find the modulus of \(5r_{1} Ð´Ñ™Ð• r_{2}\).

**19.92**

What is the magnitude of the vectors \( 3i + 4 j\)?

**5**

If \((P Ð´Ñ™_ T) = P\) and\( (P Ð´Ñ™_ F) = F\) implies Ð´Ñƒ_

**Identity Laws**

What is the common difference in the sequence 3, 5, 7, 9, 11Ð´Ñƒ_

**2**

Evaluate \(\|\frac{z_{1} = 3 + 2i }{z_{2} = 4 + 3i}\|\)

**3.59**

What is the distance between the points \(z_{1}\) and \(z_{2}\), given that \(z_{1} = 3 + 2i and \(z_{2} = 4 + 3i\)?

**2**

Find the unit vectors in the direction of the vector \( a=4i+3j|).

**5**

Given that \( r_{1 }= 3i + 5 j\) , \(r_{2} = Ð´Ñ™Ð•4i +19 j\). Find the modulus of \(5r_{1} Ð´Ñ™Ð• r_{2}\).

**19.92**

What is the magnitude of the vectors \( 3i + 4 j\)?

**5**

If \((P Ð´Ñ™_ T) = P\) and\( (P Ð´Ñ™_ F) = F\) implies Ð´Ñƒ_

**Identity Laws**

If \((p Ð´Ñ™_ q) = (qÐ´Ñ™_ p)\) and \((p Ð´Ñ™Ð’ q) = (qÐ´Ñ™Ð’ p)\) implies anÐ´Ñƒ_

**Commutative Laws**

Ð´Ñƒ_Ð´Ñƒ_Ð´Ñƒ_. is the use of connectives to combine two or more simple statements to form just one.

**composite statement**

The connective "\(\wedge\) in logic is a Ð´Ñƒ_Ð´Ñƒ_Ð´Ñƒ_Ð´Ñƒ_Ð´Ñƒ_Ð´Ñƒ_.

**conjunction**

Given that x + 2y = 3, 3x + 4y =1. What is x and y?

**-5, 4**

Which of the following statements is true \((p\vee q)\wedge (p\vee r)=p\vee(q\we dge r)\) \((p\vee q)\wedge (p\vee r)=p\wedge(q\ wedge r)\)

**\((p\vee q)\wedge**

Given the following equations for two related markets (A) and (B). Find the equilibrium conditions for each market. What is the equilibrium price for each market xd (A) = 82 Ð´Ñƒ• 3PA + PB , xd (B) = 92 + 2PA - 4PB , xs (A) = -5 + 15PA xs (A) = -6 + 32PB, where xd and xs denote quantity demanded and quantity supplied respectively.

**PA = 5, PB = 3 are the equilibrium**

A necessary and sufficient condition for a matrix (square) A to be invertible is that

**\(A\neq 0\)**

A matrix in which all its diagonal elements are one (1), where all other elements are zero is calledĐ´Ñƒ_

**identity matrix**

The _____of a matrix is the inter- changing of its row with the column.

**transpose matrix**

Let \(A=\begin{pmatrix}1&2&3\4&5&0\2&1&4\end{pmatrix}\), then the cofactor of matrix A is the matrix

**\(\begin{pmatri x}20&-16&-16\-5 &-2&3\15&12&-3\end{pmatrix}\)**

Calculate the determinant of the matrix\(A=\begin{pmatrix}1&2&3\4&5&0\2&1&4\end{pmatrix}\)

**-10**

Given that \(A=\begin{pmatrix}1&2&3\4&5&6\end{pmatrix}\) and \(B=\begin{pmatrix}1&2\3 & 4\5&6\end{pmatrix}\). What is \(AB\)

**\(AB=\begin{p matrix}22&28\ 49&64\end{pmatrix}\)**

What is the determinant of the \(A=\begin{pmatrix} 1&2 \3 &4 \end{pmatrix}\)

**-2**

Find the 7th term of an A.P whose first term is 102 and common difference is -3

**84**

…….is a rectangular array of numbers with reference to specific rules governing the array

**Matrix**

A salesman has below record for products sold during peak season of October to December. The products are in three variants A, B & C. How many units of product C only is he expected to sell to earn 900 commission?

**60**

The 7th term of an A.P is 15 and the fourth term is 9.Find the sequence of tenth term

**21**

The 7th term of an A.P is 15 and the fourth term is 9.Find the sequence of fifth term

**11**

The 7th term of an A.P is 15 and the fourth term is 9. Find the common difference

of the sequence

**2**

The 7th term of an A.P is 15 and the fourth term is 9. Find the sequence of first term

**3**

Find the 7th term of an A.P whose first term is 102 and common difference is -3

**84**

If the two numbers 20 and x + 2 are in the ratio 2:3, find x

**2 t**

If the two numbers 20 and x + 2 are in the ratio 2:3, find x

**2 two**

__allows the principal amount to grow at a faster rate than simple interest

**Compound Interest**

_____ have magnitude and direction but have no particular position associated with them

**Free Vectors**

_____is defined to be the matrix obtained by replacing every number ij a of the given

matrix A by its cofactor in the determinant of A

**Cofactor Matrix**

Use Cramer‟s rule to solve the following: 2x+3y=1, 5x+6y=0

**4 four**

Use Cramer‟s rule to solve the following: x+2y=3, 3x+4y=1

**-5 minus five**

Any matrix, which has the same number of rows and columns, is called a _____ matrix

**Square**

_____ could be said to be the inverse of integration

**Differential**

For Multiplication of two matrices to be possible, they must be _____

**comformable**

To find the determinant of a matrix, the matrix must be a _____matrix

**Square**

All polynomial functions are

**Continuous**

A _____ could be described by its centre (fixed) and its radius.

**circle**

A vector can be represented by directed _____ where the length and direction of the segment

corresponds to the magnitude and direction of the vectors.

**line segment**

_____ is a physical quantity which as magnitude and direction.

**Vectors**

This are defined as quantities, which are completely specified by numbers, which measure

their magnitude in terms of some chosen units, but have no definite direction in space, is refered as

**Scalars**

_____is a rectangular array of numbers with reference to specific rules governing the array.

**Matrix**

_____is a mathematical model which allows the enumeration, display, manupulation and processing of both small and large volumes of vectors easily in orther to achieve a desired result

**Matrix algebra**

_____is paid by a borrower of assets to the owner as a form of compensation for the use of the assets

**Interest**

Simple Interest is only calculated on the

**Principal**

The _____ are the amount of time available for material purchases and construction

**Constraint**

_____is the point at which the curve is neother a maximum nor a minimum value

**Point of Inflexion**

Differentiation could be said to be the _____ of intergration

**inverse**

A continous function is one which has no _____ in its curveq

**Curve**

With _____ we can define intervals on the number scale.

**Inequalities**

The _____curve is the relationship between quantity and price of goods

**Demand**

parallel lines have equal rate of _____

**Change**

A good application of intercept of two lines is the _____

**Market Equilibrium**

_____ describe what happens to a function f(x) as its variable x approaches a particular

number, say c

**Limits**

An _____ sequence is one whose terms are uncountable.

**Infinite**

A _____ sequence is one whose first and last element are known

**Finite**

A sequence is a succession of terms spanned by a rule or _____

**Formula**

The coefficient of the twovariables x and y of a circle must be

**The same**

A circle could be described by its _____ and its radius.

**Centre**

The is the distance between the centre of the circle and the circumerence

**Radius**

This are defined as quantities, which are completely specified by numbers, which measure

their magnitude in terms of some chosen units, but have no definite direction in space, is refered as

**Scalars**

_____is a rectangular array of numbers with reference to specific rules governing the array.

**Matrix**

_____is a mathematical model which allows the enumeration, display, manupulation and processing of both small and large volumes of vectors easily in orther to achieve a desired result

**Matrix algebra**

_____is paid by a borrower of assets to the owner as a form of compensation for the use of the assets

**Interest**

Simple Interest is only calculated on the

**Principal**

The are the amount of time available for material purchases and construction

**Constraint**

_____ is the point at which the curve is neother a maximum nor a minimum value

**Point of Inflexion**

Differentiation could be said to be the of intergration

**inverse**

A continous function is one which has no in its curve

**Curve**

Two numbers are in the ratio 3:4. If 10 is subtracted from both of them the ratio

will be 1:2. So the numbers are?

15 and 20 fifteen and twenty

The mean of age of 5 men is 40 years. Three of them are of same age and they are excluded. The mean of

the remaining two is 25. Age of one of the excluded person in years is?

**200 years two hundred years**

With we can define intervals on the number scale.

**Equalities**

The demand curve can be represented in many forms such as

**Quadratic**

_____ is the amount of goods requested for by customers at any point in time.

**supply**

The _____ of a straight line can be defied in respect to the angle of inclination of the line with the x -axis

**slope**

_____ are quantities, which are completely specified by numbers, which measure their magnitude in terms of some chosen units, but have no definite direction in space.

**scalers**

_____ is a single row or column matrix

**vector**

_____ is a matrix in which its transpose is equal to itself.

**Symmetirc**

Any matrix of dimension (m x n) with all its elements equal to zero is called a ___matrix

**Null Zero**

One important instrument for communication, but not easily mentioned is the use of

**Figures**

Compute the simple interest on N5,700 for 2 years at 2.5% p.a.

**N285.00 two hundred and eighty five naira**

The mean of 4 numbers is9. If one number is excluded the mean becomes 8. Find the excluded number

**12 twelve**

if the mean proportional between x and 2 is 4, find x.

**8 eight**

A bill of N1020 is due in 6 months. True discount in rupees at interest rate 4% per annum is

**20 twenty**

Ram lends Hari Rs. 1000 and Hari repays Rs. 13000 to Ram at the end of 3 years in simple interestfully. The rate of interest Ram charged to Hari per annum for repayment of loan is?

**0.1**

A _____ is a rectangular array of numbers with reference to specific rules governing the array

**Matrix**

A salesman has below record for products sold during peak seson of October to December. The products are in three variants A, B & C. How many units of product C only is he expected to sell to earn 900 commission?

**60**

The 7th term of an A.P is 15 and the fourth term is 9. Find the sequence of tenth term

**21**

The 7th term of an A.P is 15 and the fourth term is 9. Find the sequence of fifth term

**11**

The 7th term of an A.P is 15 and the fourth term is 9. Find the common difference of the sequence

**2**

The 7th term of an A.P is 15 and the fourth term is 9. Find the sequence of first term

**3**

Find the 7th term of an A.P whose first term is 102 and common difference is -3

**84**

A statement or (proposition) in the context of logic is a declarative sentences or an expression of words which are

**Either**

The buying price of a basket of oranges is N1000 and the selling price is N5 per orange. What is the profit per basket if 250 oranges are found in the basket?

**N250**

What is the break even point (quantity) if the buying price of a basket remains N1000 and the selling price is N5

**200 oranges**

The buying price of a basket of oranges is N1000 and the selling price is N5 per orange. What is the profit per basket if 300 oranges are found in the basket?

**N500**

There are _____ types of Vectors

**4**

_____ is a matrix in which all its diagonal elements are one

Identity

Find the gradient of the straight lines and their angles of inclination A(-2, 0) and B(6, -4)

**45**

Find the gradient of the straight lines and their angles of inclination A(2, -3) and B(4, 5)

**45**

Ram lends Hari Rs. 1000 and Hari repays Rs. 13000 to Ram at the end of 3 years in simple interestfully.

The rate of interest Ram charged to Hari per annum for repayment of loan is?

**0.1**

A man bought three qualities of tea in the ratio 5:4:3 with prices per kg. N390, N375 and N450

respectively and mixed them together. The cost price of the mixture per kg. in Rs. Is?_____

**400**

The mean of age of 5 men is 40 years. Three of them are of same age and they are excluded. The mean of

the remaining two is 25. Age of one of the excluded person in years is?_____

**200**

The mean of age of 5 men is 40 years. Three of them are of same age and they are excluded. The mean of

the remaining two is 25. Age of one of the excluded person in years is?_____

**none of the above**

Two numbers are in the ratio 3:4. If 10 is subtracted from both of them the ratio will be 1:2. So the numbers are?___

**15 and 20**

If a business grew by 212 percent in one year, what would be the decimal equivalent?_____

**0.0212**

A bicycle has been marked down by 40percent to N120. what was its original price?

**N180**

A dress selling for N45 was reduced by N9. by what percent was the item discounted?

**20percent**

What is the total cost including shipping and handling for a N20.15 order with a rate of 10 percent

and minimum charge of 3.00?

**N23.15**

If the two numbers 20 and x + 2 are in the ratio 2:3, find x_____

**2**

Round 2.748 to the nearest hundred

**2.7**

Rename 3/8 as a decimal

**37.5**

Find the due date of a three month loan made on April 15

**July 16**

Find the amount of trade discount offered for a purchase of N7,800 less a 25 percent discount

**N195**

Rename 63 percent as decimal

**0.63**

when homes and other real estate are financed, the installment loans are known as:

**open credit**

The smallest number that can be divided evenly by each original denominator is the

**Prime number**

When requesting an order of merchandise of materials, the originating documents Is referred to as a:

**sales invoice**

When multiplying any number times zero, the resulting product is always

**a three digit number**

The symbol < means

**less than**

When changing from one unit of measurement to another, a conversion factor is used to:

**multiply one unit of measure to obtain the equivalent of the other unit of measure**

In statiistics, the word "mean" is

**of no value**

Roll a die 18 times. On each roll, define a success as the event that the face value is one. Find the probability of getting atleast 3 ones in 18 rolls of the die

**0.597**

Find the bank interest to the nearest cent. Prinicipal N2,500. Rate: 9%; Time: 180days: Interest: ?

**N10.96**

Mr John has N600 in his savings account earning 5 3/4 annual interest. After 12 months, and using the simple interest method, what amount of interest will he earned?

**N34.50**

With _____ we can define intervals on the number scale.

**Inequalities**

The ____ curve is the relationship between quantity and price of goods

**Demand**

Any matrix, which has the same number of rows and columns, is called a _____ matrix

**Square**

_____ could be said to be the inverse of integration

**Differentiation**

For Multiplication of two matrices to be possible, they must be _____

**Conformable**

To find the determinant of a matrix, the matrix must be a _____ matrix

**Square**

All polynomial functions are _____

**Continuous**

_____ is a matrix in which all its diagonal elements are one

**Identity**

The necessary and sufficient conditions for two lines to intercept are that they must be consistent and _____

**Independent**

A matrix is said to be singular if the determinant is equal to ____

**0**

The _____ of a matrix is the interchanging of its row with the column.

**Transpose**

Two or more matrices can be added or subtracted if they are of same _____

**Dimension**

A _____ is a rectangular array of numbers with reference to specific rules governing the array

**Matrix**

If the angle between two lines is zero it means that they are

**Parallel**

Which line is called y-axis

**Vertical**

On a graph which line is referred to as the x axis

**Horizontal**

Fill in the blank- Two lines are said to be _____ when their gradient is the same

**Parallel**

A statement or (proposition) in the context of logic is a declarative sentences or an expression of words which are

**Either**

Mathematics can also be applied to some real life happening

**YES**

Mathematics is the science of numbers and _____

Shapes

In order to apply linear programming, there must be as its title suggests a linear relationship between

the _____

**Factors**

A _____ is the term wise summation of a sequence.

**Series**

A _____ sequence is a sequence in which each successive terms of the sequence are in equal ratio.

**Geometric**

A sequence may be _____

**All the Listed**

In a circle, the coefficient of the two variables x and y must be the same

**YES**

A circle is the locus of a curve (equidistant from a point).

**Circle**

With_____ we can define intervals on the number scale.

**Inequalities**

The demand curve can be represented in many forms such as _____

**All the listed**

_____ is the amount of goods requested for by customers at any point in time.

**Demand**

The _____ of a straight line can be defied in respect to the angle of inclination of the line with

the x -axis

**Slope**

_____ are quantities, which are completely specified by numbers, which measure their magnitude in terms of some chosen units, but have no definite direction in space.

**Scalars**

_____ is a single row or column matrix

**Vector**

_____ is a matrix in which its transpose is equal to itself.

**Symmetric**

Any matrix of dimension (m x n) with all its elements equal to zero is called a _____ matrix

**All the listed**

One important instrument for communication, but not easily mentioned is the use of _____

**figures**