DEPARTMENTAL MAGAZINE: GANIT SUMAN

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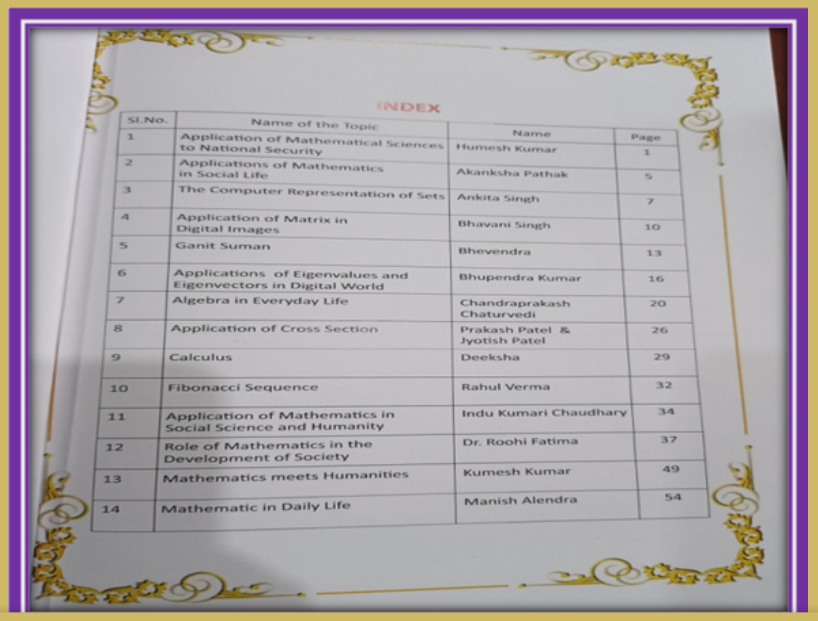

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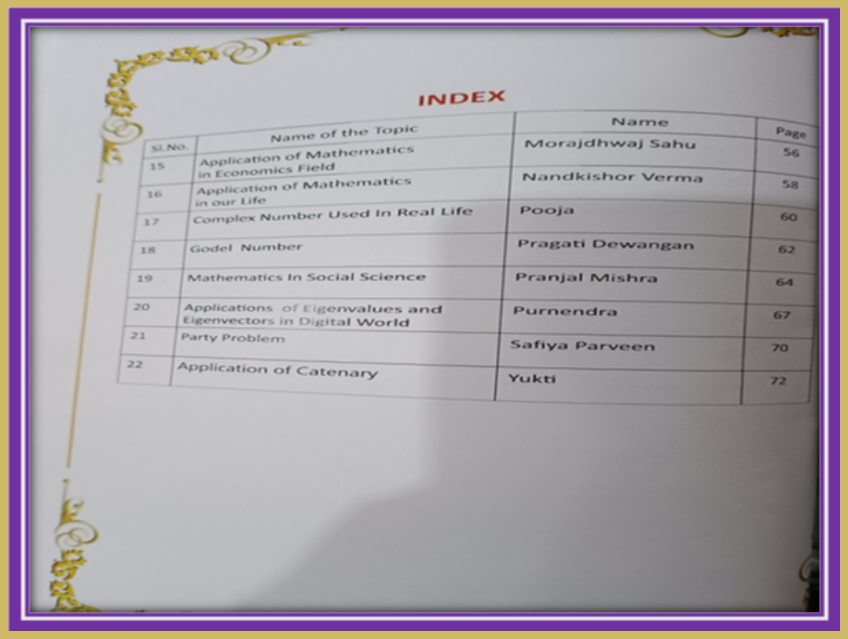

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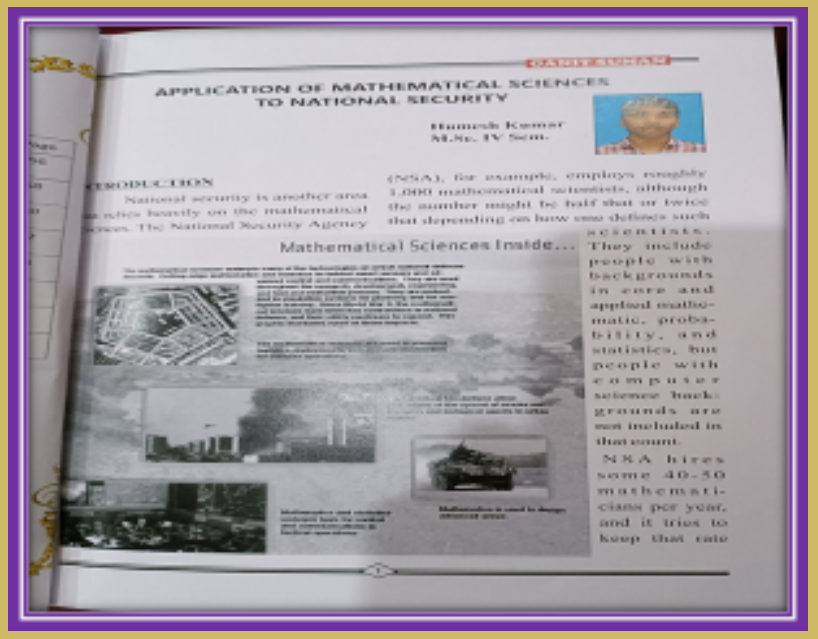

APPLICATION OF MATHEMATICAL SCIENCES TO NATIONAL SECURITY

Humesh Kumar
M.Sc. IV Sem.

Mathematical Sciences Inside...

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APPLICATIONS OF MATHEMATICS IN SOCIAL LIFE

Akanksha Pathak
M.Sc. IV Sem.

Historically, mathematics has been a subject that many students struggle with. How often have you heard a young learner utter the words, "I'm never going to use this stuff!?" as they are struggling to solve some algebra or calculus problems? For many parents and teachers, the utterance of this phrase is too often a common occurrence in the classroom. Most people will respond to the students by saying that they may need it or a future job or that it improves the critical thinking ability of the brain. While these responses are good, and well intended, they don't serve the practical and immediate needs of the child. So perhaps next time that you hear a student struggling with math, you can gently remind them of these practical applications of math in our everyday life.

Further more, it's interesting to note that if you lack knowledge of mathematics then you won't know how it can be used in your life. In other words, learning mathematics will help your mind come up with useful ways that math can be used. People often don't know what they don't know and until you fully grasp a new concept you won't realize what power it has.

FINANCIAL MANAGEMENT

Probably the single most cited practical application for math in our everyday life is for money management. If you can't add or subtract correctly, its going to be very difficult for you to survive in our rupee driven society. Ok, so I know what your thinking, "The typical person who manages their own money has no need for math knowledge beyond the basic concepts of arithmetic,

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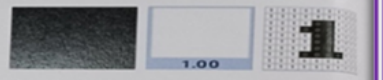
APPLICATION OF MATRIX IN DIGITAL IMAGES

Bhavani Singh
M.Sc. Final

INTRODUCTION :-

In the real world any data that is organized in columns and rows can be represented as a matrix. Matrices are used to represent real world data such as the habits or traits of a population of people.



6.00 pixel pixel matrix image

Fig (a)

MATRICS AND DIGITAL IMAGES :-

The images you see an internet pages and the photos you take with your mobile phone are examples of digital images it is possible to represent this kind of image using matrices. For example the small image of Felix the 1 (on the right) can be represented by a 10×10 matrix whose elements are the numbers 0 and 1.These numbers specify the color of each pixel (a pixel is the smallest graphical element of a matricial image which can take only one color at a time). The number 0 indicates black and the number 1 indicates white . Digital images using only two colors are called binary images or Boolean images. This show fig (a)

The Blur image , Detecting image sharpen image so on obtaining by pixel specific way .

For example - Make this bold image number 1 and take 3×3 matrix every element of the matrix is 1/9 this known as kernel matrix.

The processing of the way kernel matrix is apply only 3×3 matrix of the image matrix fig(b) and find the average of the pixel values is 1 and corresponding pixel color is white.

This process apply to again next 3×3 matrix of the image matrix .

This process is show in fig© fig(d) & fig(e).

To find the average of the pixel value continuity of the process

At the end find the result of the

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APPLICATION OF TOPOLOGY

Bhevendra
M.Sc. – II Sem.
(Mathematics)

INTRODUCTION:-

In mathematics, TOPOLOGY is concerned with the properties of a geometric object that preserved under continuous deformations, such as stretching, twisting, crumpling and bending, but not tearing or gluing.

Mobius strips, which have only one surface and one edge, are a kind of object studied in topology.

A topology space is a set endowed with a structure, called a topology, which allows defining continuous deformation of subspaces, and, more generally, all kinds of continuity. Euclidian spaces, and, more generally metric spaces are examples of a topological spaces, as any distance or matric defines a topology. The deformations that are considered in topology are homeomorphisms and homotopies.

A property that is invariant under such deformations is a topological property. Basic examples of topological property are: the dimension, which allows distinguishing between a line and a surface; compactness, which allows distinguishing a line and a circle; connectedness, which allows distinguishing a circle from two non-intersecting circles.

The ideas underlying topology go back to Gottfried Leibniz, who in the 17 th century envisioned the geometria situs and analysis situs and polyhedron formula are arguably the fields first theorems.

The term topology was introduced by Johann Benedict Listing in the 19 century, although it was not until the first decades of the 20th century that the idea of a topological spaces was developed.

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APPLICATIONS OF EIGENVALUES AND EIGENVECTORS IN DIGITAL WORLD

Bhupendra Kumar
M.Sc. IV SEM

INTRODUCTION -

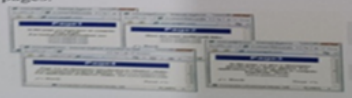
In linear algebra, an eigenvector or characteristic vector of a linear transformation is a nonzero vector that changes at most by a scalar factor when that linear transformation is applied to it. The corresponding eigen value is the factor by which the eigenvector is scaled.

Let A be any Square matrix. A non-zero Vector v is an eigenvector of A if

$$Av = \lambda v$$

For some number λ, called the corresponding eigenvalue

PageRank (PR) is an algorithm used by Google Search to rank web pages in their search engine results. PageRank was named after Larry Page, one of the founders of Google. PageRank is a way of measuring the importance of website pages.



According to Google:

PageRank works by counting the number and quality of links to a page to determine a rough estimate of how important the website is. The underlying assumption is that more important websites are likely to receive more links from other websites.

GOOGLE'S PAGERANK -

Google's extraordinary success as a search engine was due to their clever use ofeigenvalues and eigenvectors. From the time it was introduced in 1998 Google's methods for delivering the most relevant result for our search queries has evolved in many ways, and PageRank is not really a factor any more in the way it was at the beginning.

Google's home page in 1998

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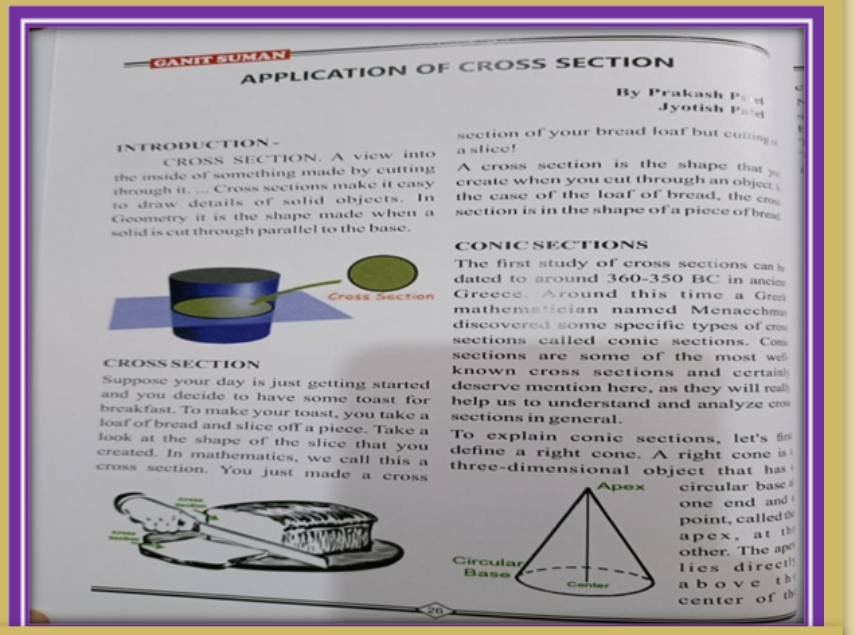


GANIT SUMAN

APPLICATION OF CROSS SECTION

By Prakash Patel
Jyotish Patel

INTRODUCTION -

CROSS SECTION. A view into the inside of something made by cutting through it. ... Cross sections make it easy to draw details of solid objects. In Geometry it is the shape made when a solid is cut through parallel to the base.

CROSS SECTION

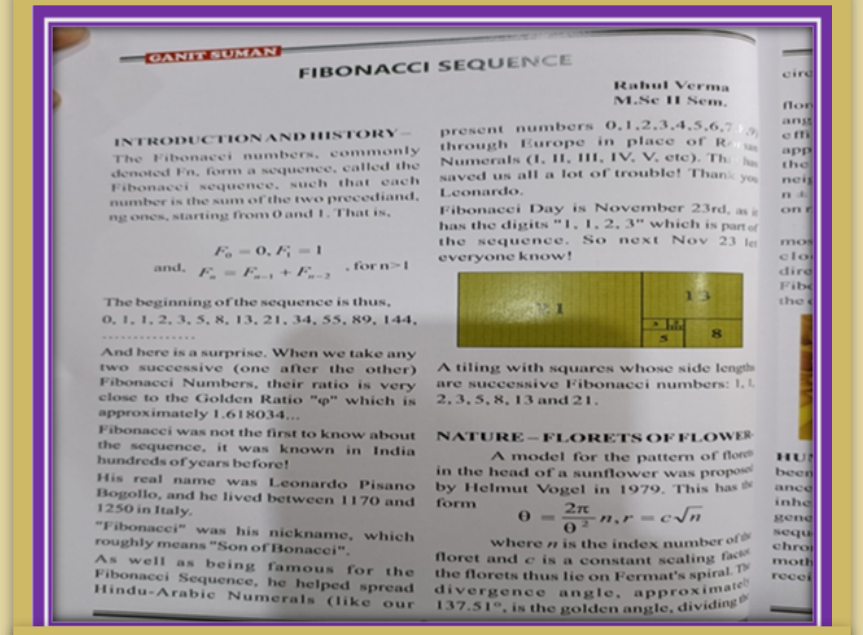
Suppose your day is just getting started and you decide to have some toast for breakfast. To make your toast, you take a loaf of bread and slice off a piece. Take a look at the shape of the slice that you created. In mathematics, we call this a cross section. You just made a cross section of your bread loaf but cutting a slice!

A cross section is the shape that you create when you cut through an object. In the case of the loaf of bread, the cross section is in the shape of a piece of bread.

CONIC SECTIONS

The first study of cross sections can be dated to around 360-350 BC in ancient Greece. Around this time a Greek mathematician named Menaechmus discovered some specific types of cross sections called conic sections. Conic sections are some of the most well known cross sections and certainly deserve mention here, as they will really help us to understand and analyze cross sections in general.

To explain conic sections, let's first define a right cone. A right cone is a three-dimensional object that has a circular base at one end and a point, called the apex, at the other. The apex lies directly above the center of the



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FIBONACCI SEQUENCE

Rahul Verma
M.Sc II Sem.

INTRODUCTION AND HISTORY –

The Fibonacci numbers, commonly denoted Fn, form a sequence, called the Fibonacci sequence, such that each number is the sum of the two preceding ones, starting from 0 and 1. That is,

$$F_0 = 0, F_1 = 1$$
and, $F_n = F_{n-1} + F_{n-2}$, for n>1

The beginning of the sequence is thus,
0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, ...

And here is a surprise. When we take any two successive (one after the other) Fibonacci Numbers, their ratio is very close to the Golden Ratio "φ" which is approximately 1.618034...

Fibonacci was not the first to know about the sequence, it was known in India hundreds of years before!

His real name was Leonardo Pisano Bogollo, and he lived between 1170 and 1250 in Italy.

"Fibonacci" was his nickname, which roughly means "Son of Bonacci".

As well as being famous for the Fibonacci Sequence, he helped spread Hindu-Arabic Numerals (like our present numbers 0,1,2,3,4,5,6,7,8,9) through Europe in place of Roman Numerals (I, II, III, IV, V, etc). This has saved us all a lot of trouble! Thank you Leonardo.

Fibonacci Day is November 23rd, as it has the digits "1, 1, 2, 3" which is part of the sequence. So next Nov 23 let everyone know!

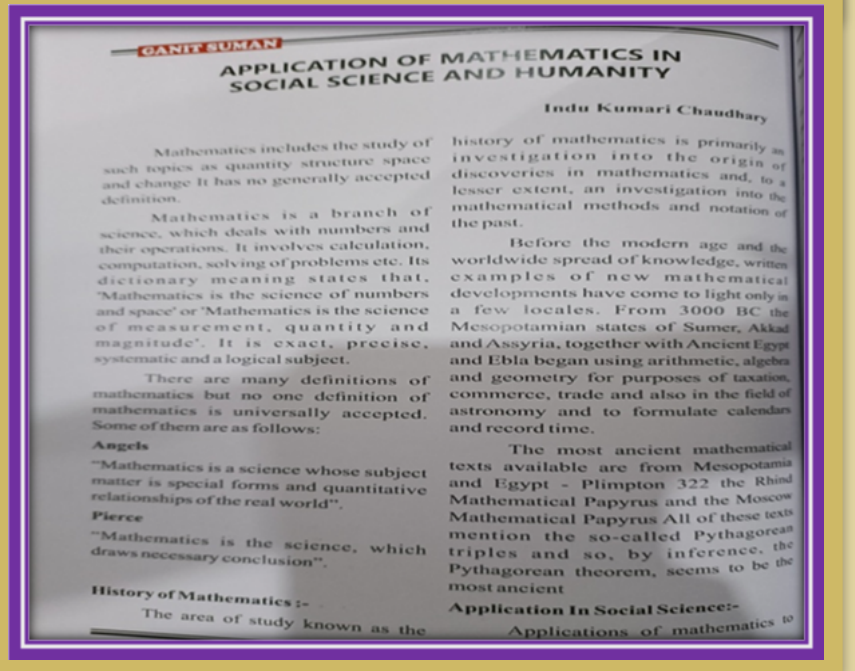
A tiling with squares whose side lengths are successive Fibonacci numbers: 1, 1, 2, 3, 5, 8, 13 and 21.

NATURE – FLORETS OF FLOWER

A model for the pattern of florets in the head of a sunflower was proposed by Helmut Vogel in 1979. This has the form

$$\theta = \frac{2\pi}{\phi^2} n, r = c\sqrt{n}$$

where n is the index number of the floret and c is a constant scaling factor; the florets thus lie on Fermat's spiral. The divergence angle, approximately 137.51°, is the golden angle, dividing the



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APPLICATION OF MATHEMATICS IN SOCIAL SCIENCE AND HUMANITY

Indu Kumari Chaudhary

Mathematics includes the study of such topics as quantity structure space and change It has no generally accepted definition.

Mathematics is a branch of science, which deals with numbers and their operations. It involves calculation, computation, solving of problems etc. Its dictionary meaning states that, 'Mathematics is the science of numbers and space' or 'Mathematics is the science of measurement, quantity and magnitude'. It is exact, precise, systematic and a logical subject.

There are many definitions of mathematics but no one definition of mathematics is universally accepted. Some of them are as follows:

Angels

"Mathematics is a science whose subject matter is special forms and quantitative relationships of the real world".

Pierce

"Mathematics is the science, which draws necessary conclusion".

History of Mathematics :-

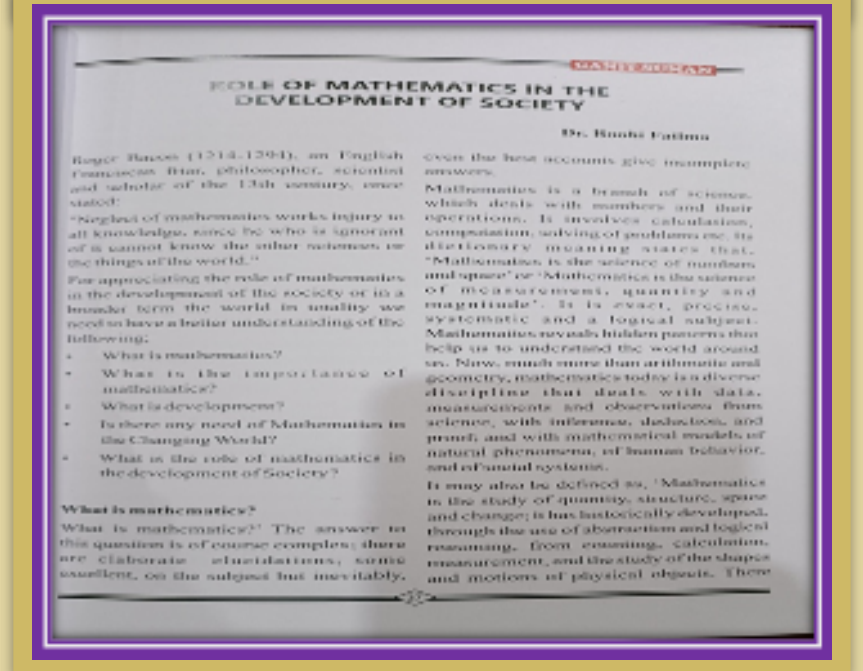
The area of study known as the history of mathematics is primarily an investigation into the origin of discoveries in mathematics and, to a lesser extent, an investigation into the mathematical methods and notation of the past.

Before the modern age and the worldwide spread of knowledge, written examples of new mathematical developments have come to light only in a few locales. From 3000 BC the Mesopotamian states of Sumer, Akkad and Assyria, together with Ancient Egypt and Ebla began using arithmetic, algebra and geometry for purposes of taxation, commerce, trade and also in the field of astronomy and to formulate calendars and record time.

The most ancient mathematical texts available are from Mesopotamia and Egypt - Plimpton 322 the Rhind Mathematical Papyrus and the Moscow Mathematical Papyrus All of these texts mention the so-called Pythagorean triples and so, by inference, the Pythagorean theorem, seems to be the most ancient

Application In Social Science:-

Applications of mathematics to



GANIT SUMAN

ROLE OF MATHEMATICS IN THE DEVELOPMENT OF SOCIETY

By: Rinku Fatima

Roger Bacon (1214-1294), an English Franciscan friar, philosopher, scientist and scholar of the 13th century, once stated:

"Neglect of mathematics works injury to all knowledge, since he who is ignorant of it cannot know the other sciences or the things of the world."

For appreciating the role of mathematics in the development of the society or in a broader term the world in totality we need to have a better understanding of the following:

- What is mathematics?
- What is the importance of mathematics?
- What is development?
- Is there any need of Mathematics in the Changing World?
- What is the role of mathematics in the development of Society?

What is mathematics?

What is mathematics?' The answer to this question is of course complex; there are elaborate elucidations, some excellent, on the subject but inevitably, even the best accounts give incomplete answers.

Mathematics is a branch of science, which deals with numbers and their operations. It involves calculation, computation, solving of problems etc. Its dictionary meaning states that, 'Mathematics is the science of numbers and space' or 'Mathematics is the science of measurement, quantity and magnitude'. It is exact, precise, systematic and a logical subject. Mathematics reveals hidden patterns that help us to understand the world around us. Now, much more than arithmetic and geometry, mathematics today is a diverse discipline that deals with data, measurements and observations from science, with inference, deduction, and proof; and with mathematical models of natural phenomena, of human behavior, and of social systems.

It may also be defined as, 'Mathematics is the study of quantity, structure, space and change; it has historically developed through the use of abstraction and logical reasoning, from counting, calculation, measurement, and the study of the shapes and motions of physical objects. Then

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MATHEMATIC IN DAILY LIFE

Manish Alendra
M.Sc. 4th Sem.

INTRODUCTION -

Math is very useful in everyday life. Math can help us do many things that are important in our everyday lives. Here are some daily tasks for which math is important.

- Managing money
- Balancing the check book
- Shopping for the best price
- Preparing food
- Figuring out distance, time and cost for travel
- Understanding loans for cars, trucks, homes, schooling or other purposes
- Understanding sports (being a player and team statistics)
- Playing music

EXAMPLES OF MATH CONNECTIONS TO DAILY LIFE:-

MANAGING MONEY

Your teen will learn skills in algebra class that will help them with money. One important skill they will learn is how to calculate interest and compound interest. Your teen can use this skill to manage their money now and when they grow up. This skill also will help them pick the best bank account. It will also help them decide which credit card is best to have. People who take out loans need to understand interest. It will also help them figure out the best ways to save and invest money.

APPLICATION OF CATENARY

Yukti
M.Sc. IV SEM

INTRODUCTION -

In physics and geometry, a catenary is the curve that an idealized

hanging chain or cable assumes under its own weight when supported only at its ends.

The catenary curve has a U-like shape, superficially similar in appearance to a parabolic arch, but it is not a parabola.

The curve appears in the design of certain types of arches and as a sense section of the catenoid—the shape assumed by a soap film bounded by two parallel circular rings.

The catenary is also called the alysoid, chainette or particularly in the materials sciences, funicular.

Mathematically, the catenary curve is the graph of the hyperbolic cosine function. The surface of revolution of the catenary curve, the catenoid, is a minimal surface, specifically a minimal surface of revolution. A hanging chain will assume a shape of least potential energy which is a catenary. The mathematical properties of the catenary curve were first studied by Robert Hooke in the 1670s, and its equation was derived by Leibniz, Huygens and Johann Bernoulli in 1691.

History

The word "catenary" is derived from the Latin word catena, which means "chain".

THE COMPUTER REPRESENTATION OF SETS

Ankita Sing
M.Sc. II Ses

INTRODUCTION:-

A Set is an unordered collection of objects, known as elements or members of the set.

An element 'a' belong to a set A can be written as 'a ∈ A', 'a ∉ A' denotes that a is not an element of the set A.

Representation of a set

A set can be representation by various

Representation of set in Different Forms

Description Form	Set - Builder Form	Roster Form
The set of all vowels in English alphabet	{x | x is a vowel in the English alphabet}	{a, e, i, o, u}
The set of all odd positive integers less than or equal to 15	{x | x is an odd number and 0 < x ≤ 15 }	{1, 3, 5, 7, 9, 11, 13, 15}
The set of all positive cube numbers less than 100	{x | x is a cube number and 0 < x < 100}	{1, 8, 27, 64}

method, such as

1. Statement form.
2. Roaster form or tabular form method.
3. Set Builder method.

THE COMPUTER REPRESENTATION OF SETS :-

There are various way to represent sets using a computer. Modern programming language , such as have predefined collection cla represent the set. In such class, we to insert the set element and the various class operations defined f algebraic operations on the set.

In this section, we shall pres method for storing elements usin arbitrary ordering of the element universal set.

Assume that the universal se finite (and a reasonable size so tha numberofelements in U are notlarge the memory size).

First, specify the arbit ordering of elements of U, such as a ….., ….., an. Represent a subset A with the bit string of length n, where ith bit in string is 1 if ai belong to A a 0 otherwise.

Example:- Let U = { 1, 2, 3, 4, 5, 6, 7, 8 10}.

i) What bit string represent the subse all odd integers in U?

The bit string that represents the set o odd integer in U, {1, 3, 5, 7, 9}, has a bit in the first, third, fifth, seventh ninth position. It is 1010101010.

MATHEMATICS MEETS HUMANITIES

Kumesh Kumar
M.Sc. IV SEM

EXAMPLES FROM ANCIENT STUDIES AND PSYCHOLOGY

For many years, the humanities and mathematics were considered as two sciences that have little to do with one another. During the last decade,

however, researchers on both sides realized the potential lying in the respective other field. In this article, we present four examples illustrating this potential.

MODELING THE PAST:

INNOVATION SPREADING IN THE PREHISTORIC WORLD

How can we understand processes that happened in prehistoric times when there were no written records of events?

One possibility is to use available archaeological findings and build a good mathematical model that we can study. However, most of the existing archaeological data is sparse and uncertain; lots of information is unknown and there is no procedure to repeat the history and obtain new data. To deal with these problems, we work closely with researchers from the humanities, whose expertise enhances our studies and provides new links in our modeling approach.

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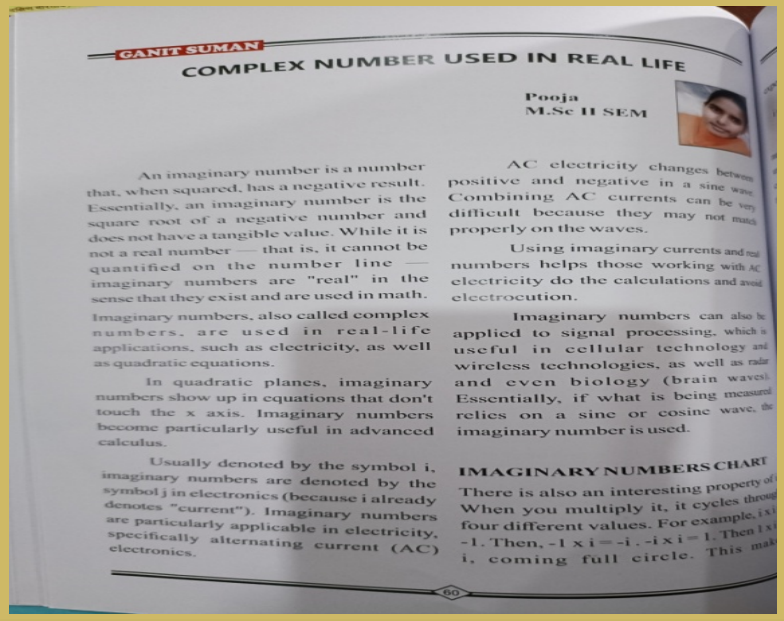


GANIT SUMAN

COMPLEX NUMBER USED IN REAL LIFE

Pooja
M.Sc II SEM

An imaginary number is a number that, when squared, has a negative result. Essentially, an imaginary number is the square root of a negative number and does not have a tangible value. While it is not a real number — that is, it cannot be quantified on the number line — imaginary numbers are "real" in the sense that they exist and are used in math.

Imaginary numbers, also called complex numbers, are used in real-life applications, such as electricity, as well as quadratic equations.

In quadratic planes, imaginary numbers show up in equations that don't touch the x axis. Imaginary numbers become particularly useful in advanced calculus.

Usually denoted by the symbol i, imaginary numbers are denoted by the symbol j in electronics (because i already denotes "current"). Imaginary numbers are particularly applicable in electricity, specifically alternating current (AC) electronics.

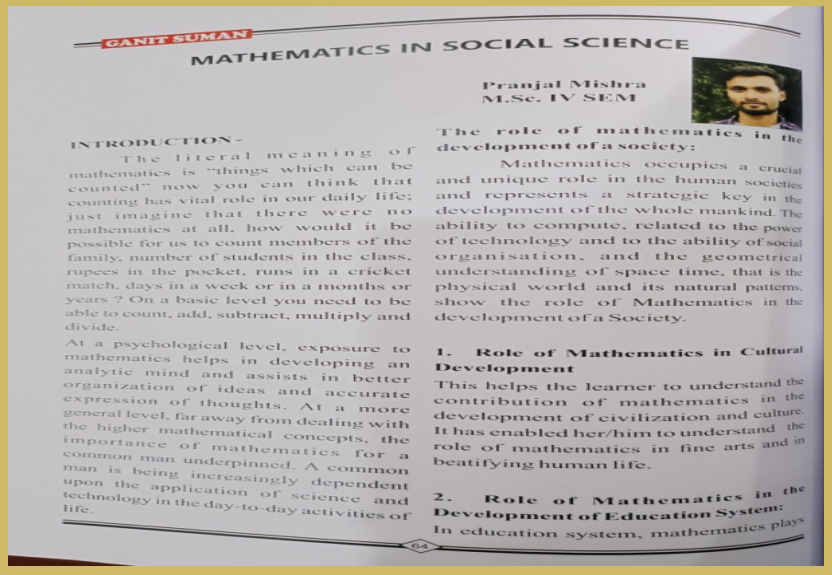
AC electricity changes between positive and negative in a sine wave. Combining AC currents can be very difficult because they may not match properly on the waves.

Using imaginary currents and real numbers helps those working with AC electricity do the calculations and avoid electrocution.

Imaginary numbers can also be applied to signal processing, which is useful in cellular technology and wireless technologies, as well as radar and even biology (brain waves). Essentially, if what is being measured relies on a sine or cosine wave, the imaginary number is used.

IMAGINARY NUMBERS CHART

There is also an interesting property of When you multiply it, it cycles throug four different values. For example, i x -1. Then, -1 x i = -i . -i x i = 1. Then 1 x i, coming full circle. This mak



GANIT SUMAN

MATHEMATICS IN SOCIAL SCIENCE

Pranjal Mishra
M.Sc. IV SEM

INTRODUCTION -

The literal meaning of mathematics is "things which can be counted" now you can think that counting has vital role in our daily life; just imagine that there were no mathematics at all, how would it be possible for us to count members of the family, number of students in the class, rupees in the pocket, runs in a cricket match, days in a week or in a months or years ? On a basic level you need to be able to count, add, subtract, multiply and divide.

At a psychological level, exposure to mathematics helps in developing an analytic mind and assists in better organization of ideas and accurate expression of thoughts. At a more general level, far away from dealing with the higher mathematical concepts, the importance of mathematics for a common man underpinned. A common man is being increasingly dependent upon the application of science and technology in the day-to-day activities of life.

The role of mathematics in the development of a society:

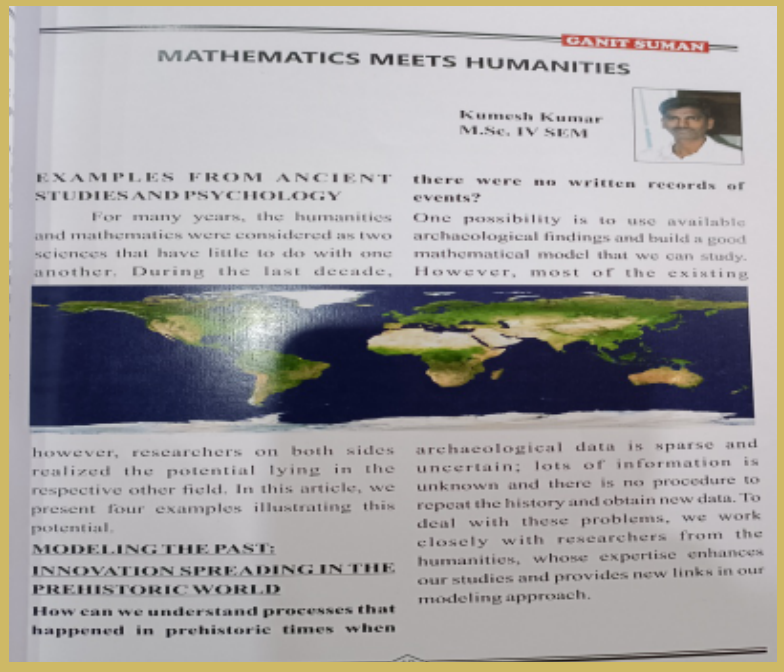
Mathematics occupies a crucial and unique role in the human societies and represents a strategic key in the development of the whole mankind. The ability to compute, related to the power of technology and to the ability of social organisation, and the geometrical understanding of space time, that is the physical world and its natural patterns, show the role of Mathematics in the development of a Society.

1. Role of Mathematics in Cultural Development

This helps the learner to understand the contribution of mathematics in the development of civilization and culture. It has enabled her/him to understand the role of mathematics in fine arts and in beatifying human life.

2. Role of Mathematics in the Development of Education System:

In education system, mathematics plays



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MATHEMATICS MEETS HUMANITIES

Kumesh Kumar
M.Sc. IV SEM

EXAMPLES FROM ANCIENT STUDIES AND PSYCHOLOGY

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INNOVATION SPREADING IN THE PREHISTORIC WORLD

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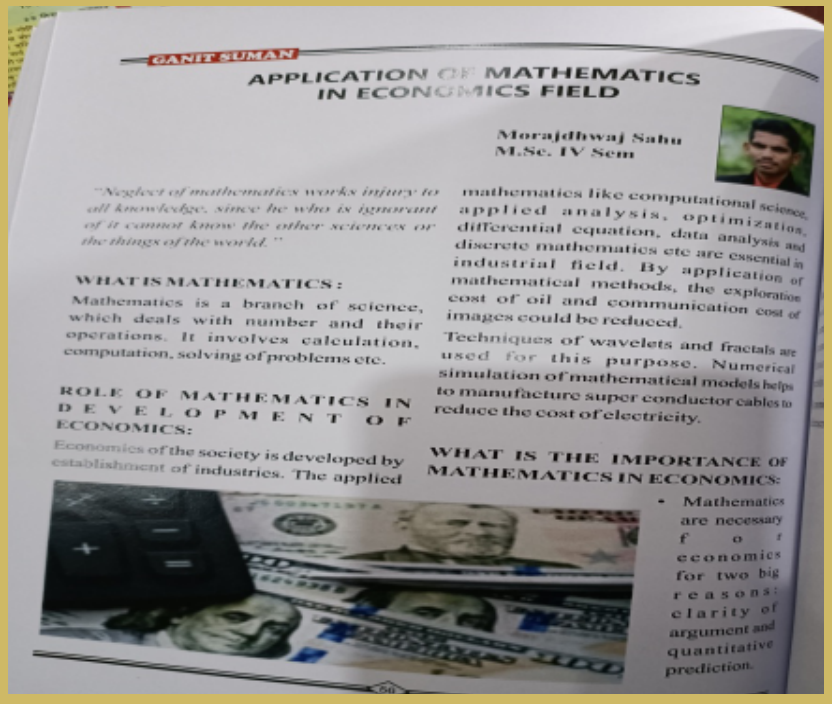
One possibility is to use available archaeological findings and build a good mathematical model that we can study. However, most of the existing archaeological data is sparse and uncertain; lots of information is unknown and there is no procedure to repeat the history and obtain new data. To deal with these problems, we work closely with researchers from the humanities, whose expertise enhances our studies and provides new links in our modeling approach.



GANIT SUMAN

APPLICATION OF MATHEMATICS IN ECONOMICS FIELD

Morajdhwaj Sahu
M.Sc. IV Sem

"Neglect of mathematics works injury to all knowledge, since he who is ignorant of it cannot know the other sciences or the things of the world."

WHAT IS MATHEMATICS :

Mathematics is a branch of science, which deals with number and their operations. It involves calculation, computation, solving of problems etc.

ROLE OF MATHEMATICS IN DEVELOPMENT OF ECONOMICS:

Economics of the society is developed by establishment of industries. The applied mathematics like computational science, applied analysis, optimization, differential equation, data analysis and discrete mathematics etc are essential in industrial field. By application of mathematical methods, the exploration cost of oil and communication cost of images could be reduced.

Techniques of wavelets and fractals are used for this purpose. Numerical simulation of mathematical models helps to manufacture super conductor cables to reduce the cost of electricity.

WHAT IS THE IMPORTANCE OF MATHEMATICS IN ECONOMICS:

- Mathematics are necessary for economics for two big reasons: clarity of argument and quantitative prediction.

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ALGEBRA IN EVERYDAY LIFE

Chandraprakash Chaturvedi
M.Sc IV Sem.

Almost every student exclaims "I'm never going to use this math in real life!" while solving algebraic equations. Isn't it?However, this is not always the situation. We often see people using algebra in most aspects of daily life; for example- the people in the market make use of algebraic operations to calculate profit and loss incurred.

Just because we do not see any "X" or "Y" does not mean that algebra has failed to prove its existence; still, the real-life examples of algebra are uncountable.

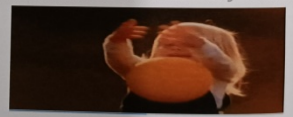
This precise and concise mathematical language entwines in a beautiful way with almost all other subjects and even daily life.

The word "Algebra" comes from the Arabic word "al jabr" which translates to "reunion of broken parts." Muhammad ibn Musa al-Khwarizmi, a 9th-century Persian mathematician, geographer, and astronomer, is regarded as "the father of algebra."

LET'S LOOK INTO THE EXAMPLES OF ALGEBRA IN EVERYDAY LIFE-

1. EARLY LIFE:-

In the early stages of development, an infant makes use of algebra to calculate trajectories and you might be surprised to know how! A 16-week baby is able to



assess the direction of an object approaching and is even able to determine the position where the object will land. Babies easily estimate the distance between them and the toy and are also able to track the objects.

GODEL NUMBER

Pragati Dewangan
M.Sc IV Sem

INTRODUCTION -

The basic idea of Godel number's is to establish a mapping between logical statement's and natural number's. This allows to apply reasoning on natural numbers, and those results can be translated back into reasoning on logical statements.

The mapping between Turing machines, one embodiment of computable functions, and natural numbers. A main result is the Halting problem. It influenced the recognition by engineers that compilers and software controlled systems can not be trusted fully which plays a role in environments lie atomic power plants.

KURT GODEL

The mapping between logical statements and finite automata, which allows for model checking.

In formal number theory a Godel numbering is a function which assigns to each symbol and formula of some formal language a unique natural number called a Godel number (GN). The concept was first used by Kurt Godel for the proof of his incompleteness theorem.

A Godel numbering can be interpreted as an encoding where a number is assigned to each symbol of a mathematical notation and a stream of natural numbers can then represent some form a function. A numbering of the set of computable functions can then be represented by stream of Godel numbers (also called effective numbers).

APPLICATION :-

Is there any example of Godel numbers being actually used in practice? If so for what purpose?

APPLICATION OF MATHEMATICS IN OUR LIFE

Namdkishor Verma
M.Sc II SEM

INTRODUCTION

Math is not only important for success in life; it is all around us. The laws of mathematics are evident throughout the world, including in nature, and the problem-solving skills obtained from completing math homework can help us tackle problems in other area of life. While many may complain that math is boring or complicated, the truth is that a life devoid of math means that we go around experiencing the world on a much less interesting level than we could.

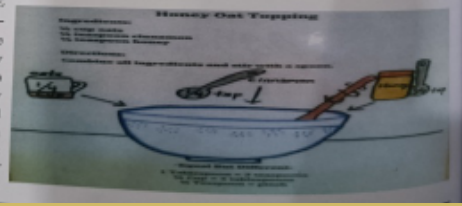
Maths skills can be pretty helpful!

1-MATH CAN MAKE YOU MORE POPULAR :-

Before you start to disagree with me, think about how great it is to go to dinner with a friend who can quickly divide a check in their mind to determine how much each person needs to pay to split the bill. Your knowledge of fraction can also help you divide a pizza among a few people. While math is popularly the realm of nerds, your ability to avoid awkward confusion and silence as you and your friends try to divide a pizza or a dinner bill is truly a valuable skill. Be known as the cool (yes, I said cool) person that knows how to do mental math quickly!

2. MATH MAKES YOU A BETTER COOK (OR BAKER):-

With a knowledge of math, for example, you can quickly deduce that a half-cup of flour is the same thing as eight



PARTY PROBLEM

Safiya Parvin
M.Sc. IV SEM

INTRODUCTION -

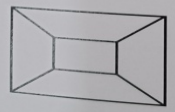
We would like to know how many people must be invited to a party where we can guarantee that there is a group of 3 people who either all are friends or all strangers. We want to invite the minimum number of people because we would like to spend as little money as possible.

To clarify the problem we will make some assumptions:

- Every pair of people at the party is a pair of friends or strangers (not both).
- The stranger and friend relationships are symmetrical.

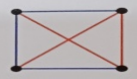
GRAPHS :-

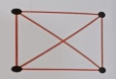
We can model the relationships at our party with graph theory. A graph consists of a set of vertices and a set of edges between those vertices.



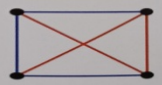
THE PARTY PROBLEM:-

To solve our problem, we will represent each person at our party as a vertex on our graph. We will place red edge between every pair of friends and a blue edge between every pair of strangers.

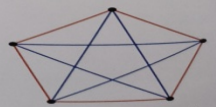




people is not enough to guarantee a group of 3 mutual strangers. What about 5 people ?



Five is also not enough people.



But 6 is enough people ,and we can prove it. isolate one person.

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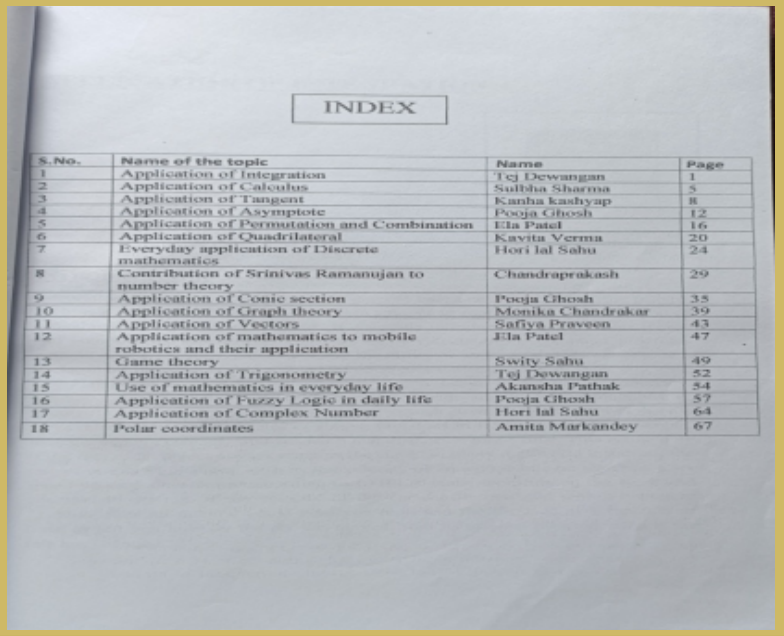

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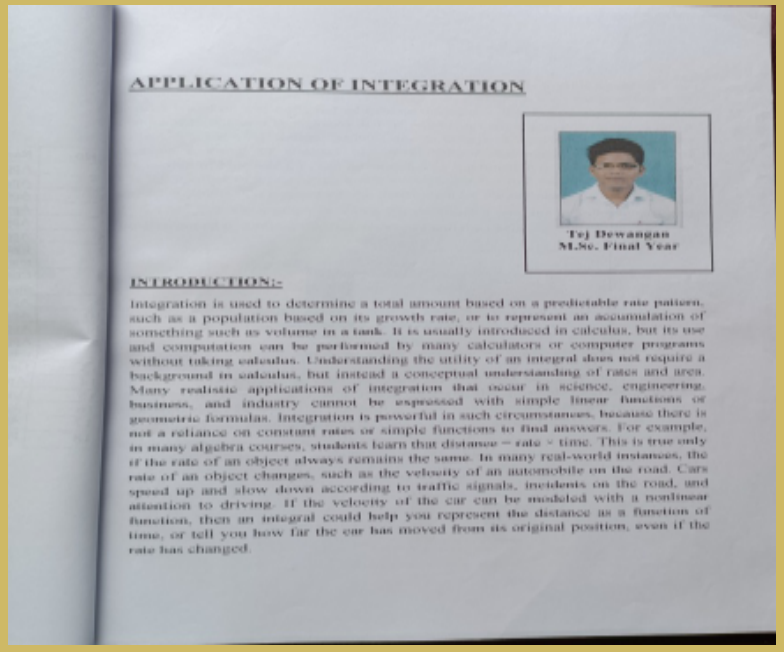
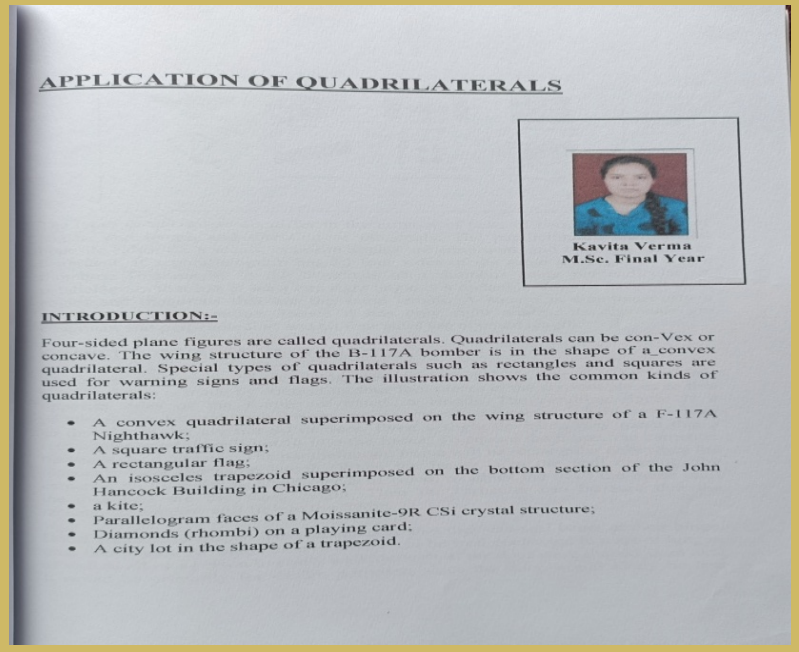


APPLICATION OF INTEGRATION

Tej Dewangan
M.Sc. Final Year

INTRODUCTION:-

Integration is used to determine a total amount based on a predictable rate pattern, such as a population based on its growth rate, or to represent an accumulation of something such as volume in a tank. It is usually introduced in calculus, but its use and computation can be performed by many calculators or computer programs without taking calculus. Understanding the utility of an integral does not require a background in calculus, but instead a conceptual understanding of rates and area. Many realistic applications of integration that occur in science, engineering, business, and industry cannot be expressed with simple linear functions or geometric formulas. Integration is powerful in such circumstances, because there is not a reliance on constant rates or simple functions to find answers. For example, in many algebra courses, students learn that distance = rate × time. This is true only if the rate of an object always remains the same. In many real-world instances, the rate of an object changes, such as the velocity of an automobile on the road. Cars speed up and slow down according to traffic signals, incidents on the road, and attention to driving. If the velocity of the car can be modeled with a nonlinear function, then an integral could help you represent the distance as a function of time, or tell you how far the car has moved from its original position, even if the rate has changed.



APPLICATION OF QUADRILATERALS

Kavita Verma
M.Sc. Final Year

INTRODUCTION:-

Four-sided plane figures are called quadrilaterals. Quadrilaterals can be con-Vex or concave. The wing structure of the B-117A bomber is in the shape of a convex quadrilateral. Special types of quadrilaterals such as rectangles and squares are used for warning signs and flags. The illustration shows the common kinds of quadrilaterals:

- A convex quadrilateral superimposed on the wing structure of a F-117A Nighthawk;
- A square traffic sign;
- A rectangular flag;
- An isosceles trapezoid superimposed on the bottom section of the John Hancock Building in Chicago;
- a kite;
- Parallelogram faces of a Moissanite-9R CSi crystal structure;
- Diamonds (rhombi) on a playing card;
- A city lot in the shape of a trapezoid.

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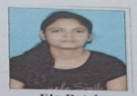
EVERYDAY APPLICATIONS OF DISCRETE MATHEMATICS

Hori Lal Sahu
M.Sc. Final Year

INTRODUCTION:-

- Computers run software and store files. The software and files are both stored as huge strings of 1s and 0s. Binary math is discrete mathematics.
- Networks are, at base, discrete structures. The routers that run the internet are connected by long cables. People are connected to each other by social media ("following" on Twitter, "friending" on Face book , etc.). The US highway system connects cities with roads.
- Doing web searches in multiple languages at once, and returning a summary, uses linear algebra.
- Google Maps uses discrete mathematics to determine fastest driving routes and times. There is a simpler version that works with small maps and technicalities involved in adapting to large maps.

Applied Mathematics to Mobile Robotics and their Application



Ela Patel
M.Sc. Final Year

INTRODUCTION:-

Mobile robots require the study of a number of specific areas and are also sensible to the applications to which they are intended. It implies that studies about mechanics of locomotion are needed which allows the subsequent application of navigation techniques to ensure the effectiveness of the robot. Studies of the dynamic behavior of the robotic assembly are necessary to ensure the performance and safety of the equipment. It is also indispensable for the censoring and the control system to guarantee the result.

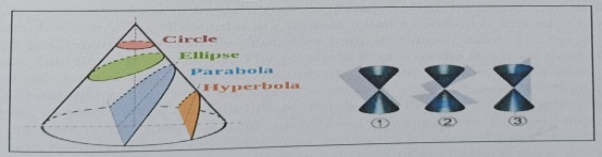
APPLICATION OF CONIC SECTION

Pooja Ghosh
M.Sc. Final Year

INTRODUCTION:-

In mathematics, conic section (or just conic) is a curve obtained by intersecting a cone with a plane. In analytic geometry, a conic may be defined as a plane algebraic curve of degree 2. The conic sections were named and studied as long as 200 BC when Apollonius of Perga understood a systematic study of their properties.

The types of conics are: - parabola, circle, ellipse and hyperbola.



APPLICATION OF TRIGONOMERTY

Tej Dewangan
M.Sc. Final Year

INTRODUCTION :-

Trigonometry is the branch of mathematics that studies relationship involving lengths angles of triangles. Trigonometry is most simply associated with planer right triangles. The applicability to non right angle triangle exists but since any non right angle can be bisected to create two right angle triangles most problems can be reduced to calculations on right angle triangle. Thus the majority of applications relate to right angle triangle. One exception to this is spherical trigonometry, of triangles on spheres, surfaces of constant positive curvature, in elliptic geometry trigonometry on surfaces of negative curvature is part of hyperbolic geometry.

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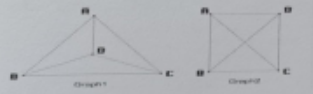
APPLICATION OF GRAPH THEORY

Monika Chandrakar
M. Sc. Previous Year

INTRODUCTION:-

In mathematics, graph theory is the study of graphs, which are mathematical structures used to model pairwise relations between objects. A graph in this context is made up of vertices, nodes or points which are connected by edges, arcs or lines.

A Graph G consists of pair (V (G), E (G)), where V (G) is a non empty finite set whose elements are vertices or points and E (G) is a set of unordered pair of distinct element of V (G).



Graph theory can solve majority of computational problem in industry. Because every system is based on some relations, consequently every system is a graph

APPLICATION OF FUZZY LOGIC IN DAILY LIFE

Pooja Ghosh
M.Sc. Final Year

INTRODUCTION:-

Logic based on the two values True and false is sometimes inadequate when describing human reasoning. Fuzzy logic uses the whole interval between 0(false) & 1(true) except only two truth values to describe human reasoning. Lotfi Zadeh, the father of Fuzzy logic, claimed that many sets in the world that surrounds us are defined by non-distinct boundary. Zadeh decided to extend two valued logic, defined by binary pair {0, 1}, to the whole continuous interval [0, 1], thereby introducing a gradual transition from falsehood to truth. Fuzzy logic imitates the logic of human thought which is much less rigid than the calculations computer generally perform. Intelligent control strategies most involve a large number of inputs. The objective of using Fuzzy logic has been to make the computer think like people. Basic results linked to the development of fuzzy logic data back to Zadeh (1973)[22] and Mamdani and Assilian (1975)[9]. Introducing a concept he called 'Approximate Reasoning', Zadeh successfully showed that vague logical statements enable the formation of algorithms that can use vague data to derive vague inferences. Zadeh assumed his approach would be beneficial above all in the study of complex humanistic systems. Mendel (1995)[10] explains the concept of

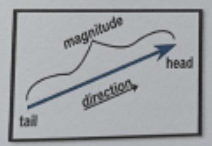
APPLICATION OF VECTORS

Safiya Praveen
M. Sc. Previous Year

INTRODUCTION:-

A vector is an object that has both a magnitude and a direction. Geometrically, we can picture a vector as a directed line segment, whose length is the magnitude of the vector and with an arrow indicating the direction.

The direction of the vector is forming its tail to its head.



Two vectors are the same if they have the same magnitude and direction. This means that if we take a vector and translate it to a new position (without rotating means that if we take a vector and translate it to a new position (without rotating it), then the vector we obtain at the end of this process is the same vector we had in the beginning.

Applied Mathematics to Mobile Robotics and their Application

Ela Patel
M.Sc. Final Year

INTRODUCTION:-

Mobile robots require the study of a number of specific areas and are also sensible to the applications to which they are intended. It implies that studies about mechanics of locomotion are needed which allows the subsequent application of navigation techniques to ensure the effectiveness of the robot. Studies of the dynamic behavior of the robotic assembly are necessary to ensure the performance and safety of the equipment. It is also indispensable for the censoring and the control system to guarantee the result.