



MATHPUNCH

AFFINE THE MATHEMATICS ASSOCIATION

Daulat Ram College
University of Delhi

2023 VOLUME X



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AFFINE

A CONTINUOUS QUEST FOR EXCELLENCE

University of Delhi, founded in 1922 is one of the renowned Institutions of India. It seeks to deliver an aura of diverse cultures, spot-on academics, wide range of co-curriculars, esteemed faculty members and an explicit campus – gliding to be in the lap of nature..

Daulat Ram College, one of the prestigious colleges of Delhi University holds a leading position both in academics and co-curriculars. Being honored, maintaining its year-long legacy to a fortunate happen in 1964 – Affine, The Mathematics Association emerged. Affine has evolved itself as one of the leading Mathematics Departments of country facilitating quality education and providing a growth in the development of research.

With new innovations, Affine renders to unlock the doors of Mathematics aiming to provide proficient knowledge of Mathematics thereby invoking creative minds to discover explicitly. Mathematics, the driving force behind all human endeavors as it provides better analysis to different apprehensions. It has made students to enjoy solving problems in everyday life and

itself explored and surrounded to a vast range of usual sum and difference. It initiates to develop the skill of exercising in a way that create students adopting methods easy and attractive enough for research in the real-world challenges.

Further, Affine never fails to interest us by its every year publications that help to take forward the legacy started long back. The department's brochure and its annual magazine Mathpunch with year long activities and achievements act as the milestones in decision making of the students, looking forward to get admission into the department, after having a glance at the development of the department till then as mentioned in the publications.



OUR VISIONARIES



DR. SEEMA KHURANA

The head of the department who has been laying her attributes gently onto the plate, proving the true meaning of a great mentor and guide. Her authenticity often grabs the attention while her dedicated teachings claim that she is a distinguished personality .

MR. VIRENDER KUMAR

He is one of the kind teachers of the department who has been serving over the years to impart explicit knowledge and guidance. He maintains the aura to guide and motivate students through his experiences thereby providing inspiration to always strive for our goals.



DR. POONAM LAKHOTIA

The way she pulls off herself has been the greatest admiration. Her deep knowledge of solving intricate problems instills motivation among students to strive for great goals. This would not hold justice if any of her roles remain unveiled – a great educator, owning great plethora of knowledge, embracing each subject with her essence .



DR. VIKAS DHAKA

A teacher who has been mentoring students to elevate their levels of innovation and creativity. A constant motivator who believes in pushing the bars. It is overwhelming to share his applicative ideologies that turn mathematics to create wonders and relate with this physical world efficiently.



DR. JYOTI SHARMA

No wonder, she has proved to be the best of all. She owns the love and respect that has been laid upon her over the years. She resembles the figure of a true mentor, an ultimate guide and forever guide. Her motivational thoughts often insights through bigger roads of success.





DR. SHELLY VERMA

We feel overwhelmed over the fact that how she dissolves herself so effortlessly among the students beyond the classroom. A wonderful teacher, an excellent guide and a commendable motivator, no words would ever prove enough to describe her perfectly.

DR. ASTHA CHAUHAN

One of the most prominent teachers who feels no limitations reside over knowledge. She aims at imparting the best to the students believing that there's always a scope of something better. Her logical and analytical skills often motivates students to learn and achieve more. .



DR. UMESH KUMARI

With the best conceptual clarity, she outstands herself to create a difference. She focuses on making things relatable giving it a finest understandable approach. We are always carried away by her successful conclusions to each amendments.

MS. SAPNA MEENA

Perfect to be credited with Miss Walking Encyclopedia. In no time, she has swept a quite large portion to reside in student's heart. She has been one of the amazing teachers who has ignited the zeal of new possibilities and the enthusiasm to achieve more.



MS. DIVYA KHAPRA

She is one of the efficient teachers of the department who manages to maintain the delicacy in her teachings. She believes in proficiency, aspiring students to excel and exhibit things in a more comprehensive manner. She effortlessly resolves each queries providing room for improvement.



Gungun Chauhan (President)

Taking one major step that can change the way you look to life is something that always remain in our minds. Standing for the post of PRESIDENT was actually one of those major steps that I took which I never thought in my past two years,

Being a child, I have always envisioned my life as being simple and smooth going but who knew that the realisation of complication might hit as I take a step to become a VICE-PRESIDENT of my own Department. Mathematics has always been close to my heart since my childhood and now I can say that Affine too will also stay close to me as I sign off from my post. Being a post holder that too this high position was never my dream, its just the circumstances and my work that took me to this phase which I can say was really experiencing and not to mention a bit tough. This decision was never easy for me, it includes all the twists and some bad experiences that I faced but they all seem to be worth. As I look back, being working under the union for two years was really something that took a great turn when I see myself as Vice President who actually handled the whole work and balancing the academics too. It took us time to actually come to terms with the actual on-ground work but the saying goes that time changes everything and it turned out to be good. We all have phases where we feel that we are on wrong track or something bad is going to happen and we too had such times during the time of handling big events but working with like minded people and our teachers who believed in us for one whole session was our key to the solution that can never be forgotten. The love and respect that I received from the juniors and my mates was really satisfactory in my college life. All the time I had spent with my pressy and my union to organise grand

me being one of the studious and introvert child that never gets involved in such activities . Its always that one click and one push that we need that can take a whole turn of events and who knew this could have been one of my favourite decisions. With the love of Mathematics, Affine too has taken up a place in my heart and will stay and remembered as a sweet and a bitter memory. This position was really something that I got scared for but with the help of my vicey and my team and not to forget my convenors who showed their trust on me to the fullest I was able to stand where I am today. This was not an easy journey but I wont say that its the toughest. This journey will turn the way we will look to it and I realised it to be a bit strugglesome but loving and experiencing. I can feel my happiness when I say we handled the whole department offline after two long years of online work in such a great way. There were times we felt struck between studies and work, between events and administration but it all turned to be the best and out of our expectations. All the respect that I received from affine family will always be unforgettable and I believe our department will go in good hands as I look back and think of the way our juniors handle the situations. The times I spent with my team, the times that come as a flashback in my mind of all the events that we did, I can happily sign off and give this position to my junior to take this legacy forward. Thanks to all who showed a trust in me and thanks to the team who always listened and respected my decisions to the fullest.



Harika (Vice-President)

events will always remain one of my favourite times. Thanks to this journey that can surely take me to higher heights in my life



**Manvi
Sharma**
(**General secretary**)

Greetings Everyone,

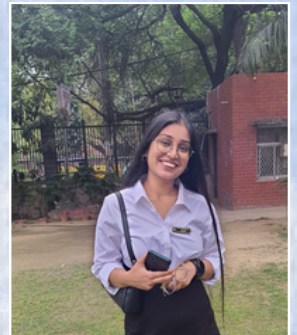
This year was filled with many ups and downs,

Leaving the comfort of our homes and moving to Delhi was a big transition for us all. But being the GENERAL SECRETARY of Affine helped me in accommodating all the changes in the most efficient way. Last year I never would have thought of being so social and participating in the managing of events, but Affine assisted me in the journey of improving myself as a person, and helped me become more confident and organized, for that I'm grateful to not only the members of the union and Extended Committee, but all of the teachers and students as well.

Uncertainty and variability are a part of life and being in the Union of Mathematics Department made me realised that. As the General Secretary I learned a lot of new things, coordination, cooperation,

management and unity are to name a few. So, I'm glad that I seized the opportunity and proud of myself for going out of my comfort zone to fulfill all the responsibilities that come with the role. Lastly all I would like to say is "Carpe Diem".

Greetings , It's been already a year since I became a part of this prestigious College. I was a little budding aspirant and curious individual. Little did I know that in a year I would be a whole new person and being a TREASURER played an immense role in it. I am very thankful to "Affine" for guiding and motivating me throughout. Working as a treasurer would have never been easier if other union members and Extended Committee members were not there with me. The experience that I have gathered by working here will definitely help me a lot in the future. Being a treasurer has taught me how to manage funds and safeguard the organization's financial aspects. Today I feel proud of myself because I have been a part of the Student Union of Mathematics department and have contributed towards it.



**Urvashi
Khaliya**
(**Treasurer**)



Diksha
(**Joint secretary**)

The transition from school to college has been really beautiful for me. Getting the opportunity to be a part of students union of our department was anything and everything I ever imagined. This whole journey has taught me and helped me a lot. Being the JOINT SECRETARY of Affine- The Mathematics Association, I have surely enhanced my confidence which has led to an overall personality development for me. What I have learned from all the other union members and the whole affine family will stay with me for my whole life. I still remember the first day of the meeting, when I had a very little knowledge about the union and a little confidence was enforced into me by the teachers. Even on the very first day it felt like their love for me was at its pinnacle. It was

definitely a long journey with a lot of ups and downs and the events for which I worked with my whole heart and soul. The expression of joy which we had on our faces after our every little achievement was more than satisfying for me. Getting this opportunity was a dream for me. It felt like for the first time I had accomplished something on my own. The experience, the learnings and all the memories which we made will stay with me forever.. I will always be grateful to the whole Affine family. Thanks to everyone who believed in me.

Extended Committee

Creative Team

The shades of innovation and ideas integrating to initiate a rainbow, connecting the souls, dreaming the energies and shaping the idea - recites the entire tale. On a journey to create big, we were dwelled to encounter the unusual and deliver the exceptional. Working with different arms and ambiguous with explorations has certainly made us to create an undesired artwork. Creative team has put forward the legacy to secretly capture, innovate and create the moments into the look book of Affine. We wish to flourish this forever.



Anamika
Creative Head



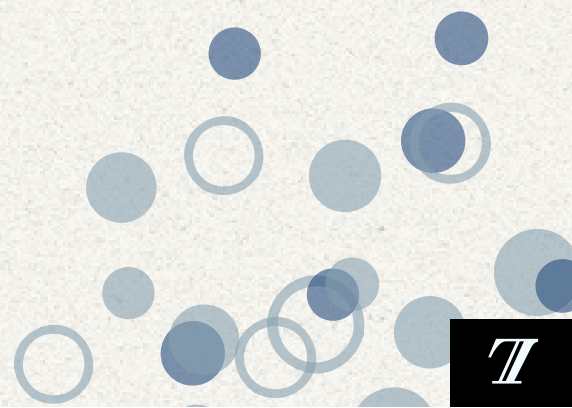
Dristhi Arora
Creative Head

Content Team

Writing was never a skill, it has always been an imagination. While framing your imagination into perfect sequence of words and commemorating that you are required to enchant the readers often stimulates to voice and embellish the aphonic. Driving towards new possibilities and inventions has led me to contemplate discrete perspectives over a single amendment. Acknowledging the beauty, appreciating the surreal and allowing the uncertainties to land flawlessly.



Mridul Kumar
Content Head



Extended Committee

Management Team

While sleepless nights seemed tired, efforts getting settled. For goodness sake we tried, dwelling things to happen. Connecting each dots on a vision to upscale the delicacy, to stimulate the energies and accomplish the mission. Managing each event with utmost dedication, working on toes, maintaining Affine's asset has been the greatest achievement. It feels fortunate to work with endurance and enable a successful completion of each event. Wishing to bringforth such accomplishments further.



Ruby Kotwal
Management Head

Sponsorship Team

Collaborative efforts with mutual benefits and elongated interests forms the best helix code. No event in the history of Affine has been pulled off successfully without the sponsorships and to get the best one needs to pitch a little too high. Escorting the best possible sponsorships allowed us to forego all major hindrances in implementing any event. Substantially, it has empowered us to value others' interests providing a professional aura to work in.



Laxmi Verma
Sponsorship Head

AN ARCADE OF EVENTS

ORIENTATION

A new beginning, unfolding new experiences, acquainting with diverse personalities, accomplishing the desires and a forever longing to create memories has always been an emotion.

The Juniors, #1st Years, loaded with excitement, cherishing for the fun-filled events, synchronized laughter and a pinch of naughtiness were all set to turn the tables. Hence, to spice up the level of enthusiasm and a talk over upscaling the skills and enhancing their abilities with having a meet and greet session, Affine- The Mathematics Association, organized an orientation session to dig them into the plethora of DRC i.e. discussions about societies, the placement cell, UNION, Extended Committee and opportunities that are prevailing in a long run.

The Orientation started with the General Secretary giving a brief of the functioning of the department and introducing the body members of Affine to the juniors. Then the Union Members and the Extended Committee presented themselves by briefing about the duties and responsibilities performed by each member corresponding to their post. Furthermore, a short introduction was

given by the juniors which revealed the diversity subsisting in the department. In addition, a sort of questionnaire was held to resolve all the queries about the societies, placements, career sessions and a lot more.

Finally, the event was wrapped with a sweet note wishing them the best of their destiny and the opportunities waiting their way.



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CHEM ACADEMY

A mission to identify goals, improve communication and coping skills, strengthen self-esteem and to evoke humanistic approach, Affine - The Mathematics Association organized a career counseling session on 16th January, 2023 in collaboration with Chem-Academy to favor the undergraduate students with the best knowledge of diverse fields and careers one can choose.

The session began with the Vice-President Harika introducing the speakers Mr. Pravesh Tomar and Mr. Pradeep Rajput to the audience. A little later, the speaker started with a wide discussion on the different fields and courses provided while arousing clarity of interest one can choose. It further went onto discussing various competitive exams such as IIT-Jam and likewise. Besides, we further had an interactive spell where the students extended their thoughts and resolved their doubts.

Finally, a vote of appreciation by the President Gungun Chauhan was given which concluded the event.

The session though insightful was an eye-awakener to the students skeptical for their career and often found puzzled by the diversity offered in a particular domain. Cheerful faces, energized outlook and positive responses were sufficient to hint that the audience encountered a great experience.



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FRESHERS'23

Unquestionable desires accelerating the excitement, the forever urge to attend the college freshers' and the extended pulse to connect with distinct personalities is enough to energize and charm the event.

Thereby, blending all the ideas and synthesizing the energies, Affine - The Mathematics Association comes up with its most celebrated event - Freshers'23 with the theme "Relation and Integration of 1990's and 2023" to initiate the thrill and excitement with inviting the newbies to step-up from their comfort zone and evolve through Affine.

It all started with welcoming of our faculty members and certainly the "to be mathematicians" ready to stimulate the grace and vibe of the event. The all-time ritual "Ramp walk" was then drafted invoking the first yearies to introduce themselves and involve throughout.

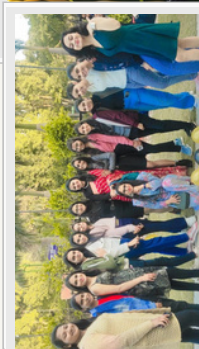
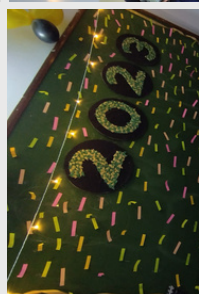
While collaborating we somewhere started to celebrate the diversity acknowledging the creativity and flaws. Moreover, lined up with some heart-warming performances by the juniors delighted the aura. A sequence of games was then played adding the fun element and allowing the unpredicted to showcase their hidden talents.

However, to stir-up the mood a little high, the seniors came up with their pieces of diligent efforts and innovation which swayed the floor with a bang.

Further, we head on to give away the titles of the event - the most enthusiastic and charming Aastha Yadav drove it to Miss Freshers, the one who left everyone in amaze with her energetic persona... Miss Talented was successful held by Kavya Singh and finally cheering all the vibe and mood.. Shreya Yadav successful lift up for Miss Retro.



Wrapping up the excitement, we finally move to the end of this event recapitulating the days we prolonged for this college fun and its craziness. Never knew this would turn so amazing filling everyone with boundless joy and happiness.



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CHAHAL ACADEMY

Affine - The Mathematics Association organized a collaborative session with Chahal Academy, a progressive talk on taking UPSC as a career option. This was one of the finest attempts in invoking the hardworking and resilient minds who wish to direct their journeys as a civil servant.

The session began with the speaker talking about the major events that happened in the modern history of India. This was to mark the successful and endeavoring efforts made by the activists plunging towards freedom. This resembles the efficient and dynamic personality essential to uphold the responsibilities as a civil servant.

Furthermore, a brief analysis of the UPSC-CSE paper was given defining the stages and topics involved in the examination. Understanding that with a cut-throat competition, it requires a consistent and dedicated attitude towards the examination.

We then had a question and answer round where the students put out all their queries being responded perfectly.

Hence, the session turned out to be quite overwhelming flourishing the students to dwell into the major intricacies of the subject remembering the complexity it possess.



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PLACEMENT CELL

Choose a job you love and you will never work a day in your life. Discovering jobs, building new connections and developing one's skills was never too difficult for DRCians.

Affine - The Mathematics Association, pushing the bars thereby collaborated with the Placement Cell Vriddhi of DRC to provide a deep discussion on the maps of getting into the Placement Cell, the job opportunities and the outline of the overall incremental.

The session started with the welcoming of our panelists - Tanishqa Gupta (President) and Priya (Co-President). They then briefed about the procedure of getting into the placement cell, benefits of having a job security offered by placements and the three-tier system of jobs. An interactive spell was further held in which the students resolved their queries on up scaling their skills and which frequently restrict them to join the placement cell.

The session ended dexterously diving everyone into the pool of information imparting explicit knowledge of employable skills, right career and the overall requirements in boosting up ones' CV.



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DIPS ACADEMY

Having all the confusion as we reach the end of the graduation, students face a dilemma of what to opt for in Masters. Looking to the same, Affine - The Mathematics Association organised a session on IIT Jam as an option in collaboration with Dips Academy on 15th February, 2023 to help students in this domain.

The session began with welcoming our keynote speaker Mr. Rajendra Dubey Sir by Kajal from 3rd year who is one of his students. As the session went on, Dubey Sir filled the atmosphere with such positivity that left students spellbound. With his humorous nature, he kept the session lively with some of his stories following which he came to the topic of how easy JAM can be for students like us. Taking the statistics in hand, he assured us that nothing can be touched if we keep following the three rules - Labour, Intelligence and Perseverance. He further quoted that one's capacity is always greater than the sum of all the challenges.

As the session came to an end, Dr. Vikas Dhaka Sir who himself was Dubey Sir's student thanked him for his presence and also showed his gratitude how Sir's ideals changed his life.

This session was something that will always remain in the minds of the students not because of the topic but due to the presence of such a known speaker. Department made sure that this session might help numerous to find the direction of what stays in there but never came in front.



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SHOONYA'23

Every year as a new session begins, the department organises numerous sessions and seminars but SHOONYA - THE ANNUAL FEST is one of the most awaited events of the year that excites each one involved. This year the level of excitement was at par since after two long years of online we were back with a new bang.

Inaugural Ceremony-

The inaugural of the day was done by Prof. Ajay Kumar, an esteemed dignitary who works as a senior scientist at National Academy of Sciences, India (NASI) who has been guiding trail of students imparting knowledge to pursue great heights in future.

As we move on, a trail of competitions were organised to entertain the students, reshoot all the nuts of madness and to develop their skills in a domain outside of their academics.



Pictionary-

 that seems like dumb charades but with an updated version.

This involved one's creativity as well as a perfect amalgamation of listening and contemplative skills where one has to guess the object being explained through Mathematical terms by the other.

The winner of the event were:

1. Shruti and Arpita
2. Nidhi Verma and Sakshi



Add to infinity-

 fairly quoted as "If it doesn't sell, It is not creative" marks the creative skills to advertise the product just like introducing your startup in a shark tank. Enacting to the best possibilities and grabbing over all the attention, we have the successful participants are:

1. Rinki
2. Shikha
3. Dhanmeet



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SHOONYA'23

Scape the Scavenger-

an exciting Treasure Hunt with a Mathematical fun which is obvious to solving all the clues and reaching the final destination. So, with secretly swiping all the hints under their desk and reaching the end spots, we have the winners of the event :

1. Anamika and Annu
2. Nidhi Verma and Sakshi



Stare The Stage-

an open mic to unleash one's hidden talents and attract the audience. The award beholders who perfectly made it to stare the stage...we have the successful winners :

1. Himanshu
2. Aman Johr
3. Jatin Verma and Rakshit Gupta



Poster Presentation-

an awakening game who often gets intrigued through exploring and research. This brought the best chance to showcase one's ability of ideas and finding creativity in Mathematics.

The winners of the event were :

1. Aditya
2. Anamika and Riya
3. Talagana and Manideep



The day ended dexterously leaving everyone spellbound with memorable and successful happenings prolonged for lifetime. Giggles of entertainment, loud laughter, fun loving activities, enormous participation, platform to showcase one's abilities and lastly a melodious gathering had it all.

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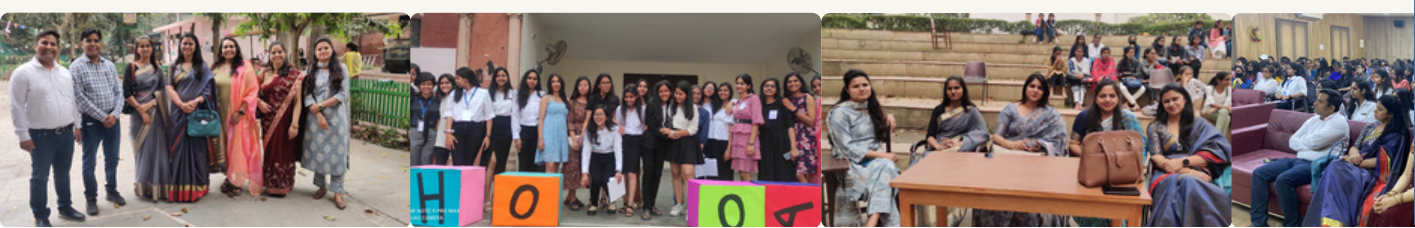
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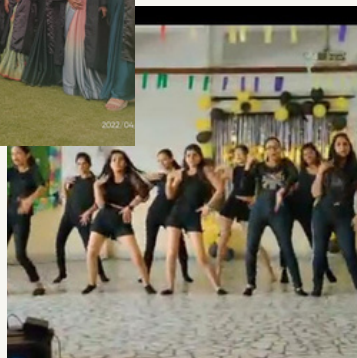
FAREWELL'22

Goodbyes are not forever, goodbyes are not the end. They simply mean we miss you until we meet again. To celebrate the presence of each student that has ever been a part of the department, the most awaited gathering i.e. Farewell is organized to bid adieu to all the students who have been grooming themselves in the three years of remarkable college journey. This year we had an amazing farewell ceremony with the theme "Girls of 21st century", imparting the idea that how stunning and alluring the confidence of a woman is with our lovely seniors attired themselves in gorgeous sarees gracing the party.



Furthermore, to pump up the levels of excitement, we had amazing performances by the 1st and 2nd year students. We had an exuberant ramp walk by our seniors which delighted the floor with their charm. But this was not all, the super-seniors presented some hidden talents to create a vibe. We then lead to the end of this ceremony by honoring the deserving individuals with the Royal titles of this Farewell. The ceremony thus ended dexterously witnessing some fun-loving memories that are going to be cherished forever. This was not the end but the beginning of a new phase.

Teary eyes, empty corridors, lack of indefinite laughs and dearth of pampering, we are already missing you seniors...



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Student's Corner

Limitless Horizons : Exploring the Infinity

~ Anamika
II Year

Have you ever wondered how many numbers there are between 0 and 1? Despite its apparent simplicity, this question leads us to some of the most fascinating and perplexing concepts of mathematics, infinity, the limitations of human comprehension. So, what is Infinity? Is infinity only a concept? A weird idea that mathematicians play with? Or does it have a connection with the world around us? Is anything really infinite?

In mathematics, infinity is a state of endlessness or having no limits in terms of time, space, or other quantity. Infinity is not a number, but rather a mathematical idea that is used to represent the concept of something that goes on indefinitely without ever reaching a limit or endpoint.

So, basically What one can tell you is what infinite is and not what is Infinity?

As Aristotle said: "Nor does this account of infinity rob the

mathematicians of their study; for all that it denies is the actual existence of anything so great that you can never get to the end of it.

A common person may perceive infinity as a never-ending sequence of numbers or events. For example, they may imagine counting from 1 to infinity as an infinite process that continues forever without ever reaching a final number. However, this perception of infinity is not entirely accurate from a mathematical standpoint. In mathematics, infinity is not a number or a quantity, but rather a concept that represents the absence of a finite limit.

The concept of infinity has been the subject of philosophical and mathematical inquiry for thousands of years. However, there is no mathematical proof for the existence of infinity in the sense of a physical quantity that can be measured or observed. Instead, it's a mathematical idea to help us describe certain phenomena, such as the behaviour of certain functions. Even though there are certain mathematical systems like calculus and set theory which deal with the idea of infinity. Still, the existence of infinity as a mathematical concept is generally accepted as an axiom or a postulate, rather

than something that can be proven or disproven mathematically.

Why are we so intrigued by the infinite? Maybe it's because of the tension between our finite lives and the seemingly unbounded range of our imagination, between the limits that we experience and the possibly infinite universe that we inhabit.

The concept of infinity has grasped a lot of people, including me, because of its unimaginable greatness. I think that the infinite does play a huge role in our lives but to get that we need to approach the infinite in a certain way.. The question still remains where this infinite process heads towards. As many intelligent people have mentioned before me; life is a music piece that is not really heading somewhere, it is the process of life itself that makes it beautiful. Similarly I think that infinity is more of a process than an actual outcome. In our lives, there is no real infinity present, but I believe there is always a desire towards reaching infinity.

The Aesthetics of Mathematics

Mathematics is not just about numbers, equations or algorithms, its more about understanding. Maths is very relevant to every aspect of our daily lives. It teaches us to be cautious of signs at all times. Understanding math can help us solve not only our calculation problems, but also our social problems. Subtracting the negatives and adding the positives can significantly improve our lives. Galileo said nature is written in mathematical language. We can see the sequence is often seen in nature. The numbers in this sequence also form a unique shape known as a Fibonacci spiral, which again, we see in nature in the form of shells and the shape of hurricanes. The fractal is a self-similar, repeating shape, meaning the same basic shape is seen again and again in the s a self-similar i, repeating shape, meaning the same basic shape is seen again and again in the shape itself. Bee hive and every snowflake are in the shape of hexagon. The ripples of a pond when something hits the surface of the water and layers of an onion and the rings of trees that form as it grows and ages are concentric circles. The moon is approximately 400 times smaller than the sun, but it is also approximately 400 times further away. This symmetry allows for a total solar eclipse that doesn't seem to happen on any other planet. Isn't nature amazing? And mathematics too. Just as the mathematics in nature makes it beautiful, we can make our surroundings too by applying it rightly. Stopping the differentiation in society, let's do the integration and learn that every problem has solution one or the other way.

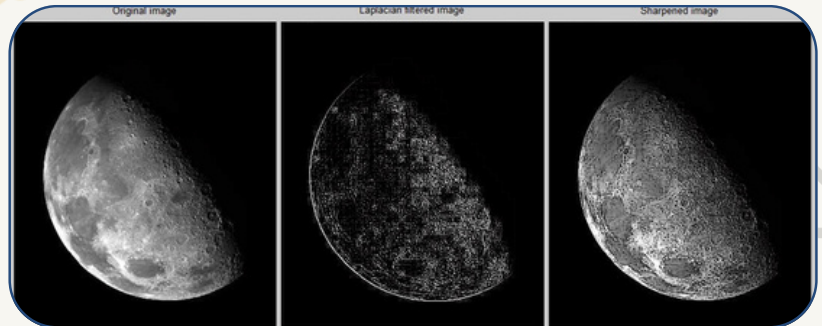
~ **Nidhi Verma, III YEAR**

Laplacian Equation

Photographs play an important role in everyone's life - Photographs connect us to our past, they remind us of people, places, feelings, and stories. But have you ever wondered how we use mathematics in photo filters? I am sure everyone uses filters for taking beautiful pictures, today let's have a look at how mathematics is used there. We took an example of sharpness quality.

In this we will provide a systematic exposition of the Laplace equations and how the Laplace equation is used in making filters and image processing etc. It comes from the Poisson equation which is represented as $\nabla^2 V = -\rho/\epsilon_0$ in the electrostatic potential, Laplacian is the special case where $\nabla^2 v = 0$ varied from different majors like electric potential, gravitational, intensity etc. In different ways. Here it's represented as a vector which is both irrotational and incompressible.

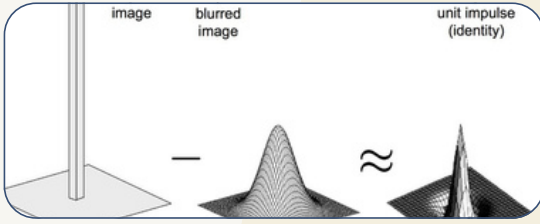
Basically in image processing to increase the sharpness, we use Laplacian filter, which is also



known as Laplacian over gaussian filter (LOG). It is the magic of coding and matrix. Mostly we use Laplacian for edge detection in the image. We use a Gaussian filter for smoothness so Laplacians found the edges easily. Then the Laplacian makes the edges sharp where the intensity of color changes. There are more other filters like Sobel, Prewitt and they work on the first derivative within one dimension but Laplacian works in second derivative terms within two dimensions..

The format of the matrix matters there for different features which we need to improve in our image. For example we take a matrix such as $\begin{bmatrix} 0 & 1 & 0 \\ 1 & -4 & 1 \\ 0 & 1 & 0 \end{bmatrix}$. Here we are focusing on the edges to make them more clear by making the center value negative..

There are lots of real life uses of Laplacian equations like to study astronomical objects clearly by clearing their photographs using filters. In recovery of poor quality images:-



For the recovery of old and blurry pictures we also use Laplacian filters. We use Laplacian to study x-ray reports more accurately. Because after filtering the images, compute the convolutions using rapid one-dimensional (1D) separation. image derivatives using Sobel and Laplacian filters are applied to remove noise and improve the resolution on any scale at which these derivatives are applied.

Conclusion:- The Laplacian equation has many other uses in other fields also. We just discussu the use of equations in image processing (sharpness quality) . It has many other real life uses which we need to observe.

~ Riya Yadav
II Year

"जिन्दगी की गणित का हिसाब लगाता एक बच्चा"

आधी रोटी खाया वो बच्चा,
शून्य की ओर देखता है, गिनता है,
एक.... दो.... .तीन... च्या..... चार.....
आधे को चार से तोलता है,
सोचता है, कोसता है, और फिर सो जाता है।
आधी रोटी खाया वो बच्चा,
शून्य की ओर देखता है, गिनता है,
गिनता है, चांद एक है, तारे अनेक है,
देखता है, समझता है और फिर सो जाता है।
आधी रोटी खाया वो बच्चा,
शून्य की ओर देखता है, गिनता है,
एक मां, एक बाप और कुछ नहीं है जोड़ने को,
जोड़ता है, कुछ मुश्किलों को, हो जाता है सब अनन्त
पार,
हिसाब लगाता है, अनन्त का और सो जाता है।
आधी रोटी खाया वो बच्चा,
शून्य की ओर देखता है, गिनता है,
अपनी अपार ख्वाहिशों के बीच मजबूरियों को छुपाता है,
तालमेल बेठाता है, अपनी आधी गणित की समझ से,
कभी जोड़ता है, घटाता है और फिर सो जाता है।
आधी रोटी खाया वो बच्चा,
असीमित उड़ान का सपना देखता है और फिर सो जाता
है।

~ Komal Prajapat
III Year

"छोटी से बड़ी बच्ची का हिसाब"

दो दूनी चार
दो तिया छह
क्या याद किया होगा ये पहाड़ा बचपन में
क्या जरूरत होगी इसकी आगे फ्यूचर में
क्या जिद थी वो भी खुद को सबसे ऊपर रखने की

आज वो बच्ची बड़ी हो गई है
वो पहाड़ा तो उसे याद नहीं
मगर हां जिंदगी का गणित जरूर सीख गई है
वो अल्फा बीटा का ये समीक्षण
इसका ज्ञात जरा मुश्किल है
मगर ये लोगों को परखना उसको बखूबी आता है

आज वो बच्ची बड़ी हो गई है
उसने नाकामयाब को कामयाब करना सीख लिया है
आज वो उस x के साथ
अपने e^x की भी पूरी खबर रख लेती है
जी हां उसने जीने का सही सलिखा सीखने की
कोशिश की है

आज वो बच्ची बड़ी हो गई है
शीशे के कितने टुकड़े पेंटागन बने है
उससे अच्छा उसने अपने दिल के हिस्सों को बिन
देखे परखने का हुनर जान लिया है
वो रोटी गोल बने न बने
मगर हां लोगों की गोल मटोल बातों को समझना
सीख गई है

आज वो बच्ची बड़ी हो गई है
वो थ्योरम क्या लेमा क्या प्रोपोजिशन क्या
आज वो अपने जीवन के हर पहलू को थ्योरम के
लॉजिक से प्रूफ कर लेती है
उसका मन किसने कितना दुखाया और कितना
रुलाया
उसका हिसाब रखने की भी जरूरत नहीं पड़ती अब
जी हां वो अपने को संभालना जान गई है



~ Harika
III Year

Mathematical Biology

Mathematical biology is expanding and developing rapidly as scientists in biological sciences turn from descriptive experiments to more quantitative experiments. The diversity and complexity of living organisms means there are vastly more challenges for mathematicians to explain and predict biological systems through modelling.

Student's Corner

It (also known as biomathematics or mathematical and theoretical biology) is a branch of biology that uses mathematical models and analyses and representations of living organisms to examine the systems that govern structure, development, and behaviour of and within biological systems.

Mathematical biology is a broad topic that can cover a large range of length scales, from the submicron lengths of DNA polymers to the kilometre length scales of migration patterns of animal herds. It relies on a more theoretical approach and analysis to solve problems rather than using experiments to prove theories like its experimental biology counterpart.

~ Gungun Chauhan
III Year

OUR ALUMNI



OUR PRIDE

DOES SHE EVEN KNOW?

Oscar Wilde gave the world this quote, "Most people are other people. Their thoughts are someone else's opinions, their lives a mimicry and their passions a quotation." I inhaled this quote and this poem is its exhalation

I've been trying,
really very hard
to be like her,
to be liked like her.
She seemed unique till now
but I've seen her somewhere else too.
Glimpses of her appear
at the places she's never been to.

I've listened to her attentively,
the words are always new, I know.
But, I ain't sure if the thoughts
are stolen or really her own.

How do you know if you're stealing?
How can be you sure you took an
inspiration?
When exactly does she speak the real
thing?
Does she even know she's not a
revelation?

She thinks she's her own person,
should I tell her she too is a copy?
Would she try to be an original then?
Or would finding the original be her
new hobby?

When you tell a thief he's found guilty,
the first thing he wants to know in
urgent need
is always who gave the tip against him,
and never how can he be redeemed.

I've been trying
really very hard
to be like her,
to be liked by her.
Until the moment I realised,
I too am trying to become a copy.
I'd started mimicing her since I don't
know,
I'd ended up realising I would never
ace her.

We shouldn't copy lives,
'cause not everyone's exam paper is
same.
But, isn't it also a copied thought,
for which we don't know the source
yet?
I don't think there are as many lives
as there are people, but wait;
if everyone were living uniquely,
would we even have anything to
relate?

OUR ALUMNI

OUR PRIDE



When exactly did we start appreciating people to the level that we wanted us to be them? When exactly are we gonna stop this even after knowing the levels of overwhelm?

This poetry is raw, poured directly from my heart to these very lines. But, I still can't say if that's all mine or is it also unknowingly someone's else's? My heart doesn't usually lie. It's sure this is neither a copy nor an artificial. But, hey my dear heart, have you ever known anything original?



Varnika Dhiman

I'VE DECIDED THE DAY

When you're asked to choose a day out of your life, you don't look for the happiest or the worst day but the one which was significant for you and the person who asked you to choose, as well.

Finally, I'm writing this.
The poem I've been postponing.
I wonder if I'd earn a kiss,
or if this is just a random thing.

I'm being told to write about a day.
Who asked me so is something I wouldn't tell.
Which day should I choose to display?
Which part of my heart should I sell?

I've debated over this a lot.
Still, nothing that I could finalise.
Some days feel like a gunshot

while others have a load to analyse.

I've decided the day finally.
The thought of reliving it discomferts.
I know it isn't too early,
but it's time that I write it even if it hurts.

It was the day I spoke a statement;
that was about me and my dark truth.
I still feel such a deep resentment,
even if that was a mistake of my youth.

OUR ALUMNI

OUR PRIDE



I've been telling you that it's difficult and that I probably wouldn't be able to speak.

It wrangled my heart even when I'm now an adult.

Despite that, you always believed I wasn't too weak.

I remember the way you had gone quiet and didn't know how to react to my rawness.

My heart has been bleeding as if it were in a riot.

Yet you always knew I'd make such progress.

I spoke to you about the thing I myself never accepted.

You just stared at me in awe, I'm not sure why.

Either it was something that you had expected or its darkness level was way too high.

I've watered my wound for eight years. Now you know how it is, the way it has always been.

I've slit it open so many times than it appears

The blood never goes away; it really can not be any further clean.

We didn't talk over this for some time, remember?

I don't know if it was me or you who wanted time.

Neither of us initiated but not because of our temper.

You just wanted to protect me from my own committed crime.

When we talked over that, whenever we did,

you told me you were shocked that I had expressed.

You tried to console me saying I then was a kid.

You said expressing this had made you so impressed.

You told me that you were so proud of me.

I don't know how you could feel that way.

You asked me if this was who I wanted to be.

I whispered, I want to be someone with whom you could stay.

~Varnika Dhiman

OUR ALUMNI

OUR PRIDE



~ Shruti Tayal

Nostalgia and ecstasy overflow as I reminisce the three years I spent being a part of the Department of Mathematics, Daulat Ram College. Affine embraced me with open arms since the day I took my first step into the college. It was indeed a rollercoaster ride, with many ups and downs and the pandemic which came with its adversities and left us with no choice than to spend more than half of our three years of degree virtually. I could not have made it, had it not been the extra effort and support put forward by my teachers, love and affection of my family and friends and all the beautiful connections that I have made in college.

The sense of belonging to “Mathematics” and to “Affine” is so deeply etched that the very thought of the launch of 10th volume of MATHPUNCH gladdens my heart.

This place has always been a part of my heart, will always be, and there’s no iota of doubt in calling it my family.

All the best to my juniors for all their future endeavors!

Through the Teacher's pen..

The block of knowledge and practice known as mathematics originates from the contributions of thinkers through the ages and all over the world. It gives us a way to understand patterns, quantify relationships, and predict the future. Mathematics helps us understand the world, and we use the world to understand math. The more math we use in our approach, the more successful we will be. Mathematics gives logic to our thoughts. It is an integral part of our lives. It is a tool in our hand to make our life simpler and easier. Mathematics develops specific reasoning, logical and critical thinking skills. The real applications of mathematics are endless.

We are surrounded by numbers, equations and algorithms, especially in the age of data science, with huge data sets that can only be understood through mathematical models and analysis.

Mathematics is the most powerful weapon a society should have.

Going forward, I find it important to realize that there is no substitute for hard work and dedication to grow in any field. Without a serious work ethic and willingness to take the necessary time to learn and master the subject, even the brightest minds can go unnoticed.

However, math requires more than that. It requires intuition, creativity, critical thinking and analysis, as well as the ability to see connections and patterns that may not be immediately apparent. It is this kind of insight that has led to many major discoveries and breakthroughs in the field.

Let us recognize and appreciate the beauty of the subject and embrace it wholeheartedly.



~ Dr. Astha Chauhan
Assistant Professor
Department of Mathematics
Daulat Ram College

Through the Teacher's pen..

Mathematics is all around
Variety of calculations it abound
Technology makes a sound
Several softwares creates a mound
Mathematics is all around

ChatGPT is newly found
Online conversations all around
Its popularity is off the ground
ChatGPT in Mathematics too surrounds
Mathematics is all around

Studies and researches on ChatGPT confound
Its accuracy in advanced Mathematics yet to found
Recognition of Mathematical objects still it crowned
Hope in future its weaknesses go underground
Softwares in Mathematics may have no bounds
Mathematics is all around



**~ Dr. Shelly Verma
Co-Convenor
Department of Mathematics
Daulat Ram College**

Spotlight Spectrum

IIT JAM Results 2023



Khushi Sen

AIR 55



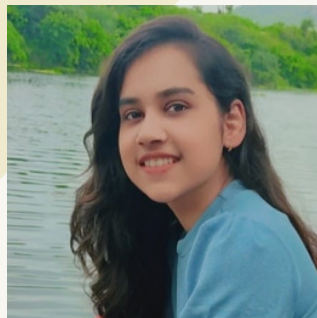
Aditi Singh

AIR 170



Sakshi Yadav

AIR 379



Khushi Sen

All Rounder Best Student

(College)

III Year



Harika Saluja

All Rounder Best Student

(Science Stream)

III Year

Proficiency Award

Chhaya Tiwari	I Year	9.41 CGPA
Paramjeet Kour	I Year	9.41 CGPA
Riya Yadav	I Year	9.41 CGPA
Ruby Kotwal	I Year	9.41 CGPA
Vaani	II Year	9.61 CGPA
Monika Singh	III Year	9.88 CGPA



EDITORS NOTE"

To the devotion, there lived peace.
To the fortune, it needed effort.
And to the best, it demanded one's self.
This has to succeed...

Warm Greetings!!

It feels fortunate to be given this opportunity and here we successfully come up with the tenth volume of MATHPUNCH which has been a delicacy upholding Affine through the years. It's a quick recap to all the unforgettable moments evidently playing the biggest role in Affine.

It's been a decade but certainly we would never stop flickering the memories not merely confined here but allowed to remain alive forever. We hope to lift it up to your deeds thereby involving this to a much longer way. We hereby express our heartfelt gratitude to all the faculty members and students for making this possible. Exceptional thanks to the Union, Extended Committee and the entire team for their boundless support enabling this a big hit.

Regards

Editorial Board



Harika Saluja



Mridul Kumar



Anamika



Riya Yadav

