

Continuum 24' Events

Schedule

Event	Date	Timing	Venue
Talk by Dr Arnab Rudra	7/2/24	1930 to 2015 hr	L1
Integration Bee	7/2/24	2045 to 2230 hr	L1
Permutation	7/2/24	2245 to 0030hr	L1
Talk by Dr Shashank Singh on Magic of Clock Arithmetics	8/2/24	1900 to 2000hr	L1
Approximation	8/2/24	2045 2230hr	L1
Math Bingo	8/2/24	2245 to 0030hr	L1
Veni, Vidi, Vici (Treasure Hunt)	8/2/24 to 9/2/24	Entire Day	Online mode
Talk by Dr Nikita Agarwal on Unfolding the billiards table	9/2/24	1900 to 2000hr	L1

Picktionary	9/2/24	2245 to 0030hr	L1
Puzzle Battle	10/2/24	1500 to 1700 hr	Skywalk
Talk by Dr Dheeraj Kulkarni on Knot Theory	10/2/24	1700 to 1800hr	L1
Ankatakshri	10/2/24	2030 to 2230hr	L1
Integration Bee (Final Round)	13/2/24	1930 to 2100hr	AB1A1, AB1 316, AB1 108

1. Integration Bee

A competition where your integration skills will be measured along with your love for calculus by means of exciting and sometimes tricky integrals.

- You can participate individually or in pairs.
- Write your answers in the answer sheet provided. Make use of rough sheets to do your calculations. You are expected to bring your own pens/pencils.
- The winner will be decided only based on total number of points.
- Using calculators and mobile phones is prohibited and may result in disqualification.

There are two stages:

1.1 Prelims

It contains 2 levels of questions.

Moderate: 10 questions of 10 pts each to be completed within the time frame of 1 min per question.

Difficult: 10 questions of 30 pts each to be completed within 3 min per question. Questions will be shown one by one with a time limit till the next question.

- Only the final answer will be considered, not full solution.
- The first answer will receive full points, the second half and the third a quarter.
- No points shall be granted to the fourth answerer.
- A bonus of 20 marks will be granted if you are able to answer the bonus question within 10 min from the start of 1st question to 10th.

1.2 Finals

- 6 questions 50 points each.
- Whole solution will be considered for marking.
- All questions will be shown to you at same time.
- You can only use “allowed theorems” to achieve your result.
- Solution will be deemed invalid if you use any other theorems.
- Only participants qualifying the prelims round are allowed to take part in the finals.

2. Permutation

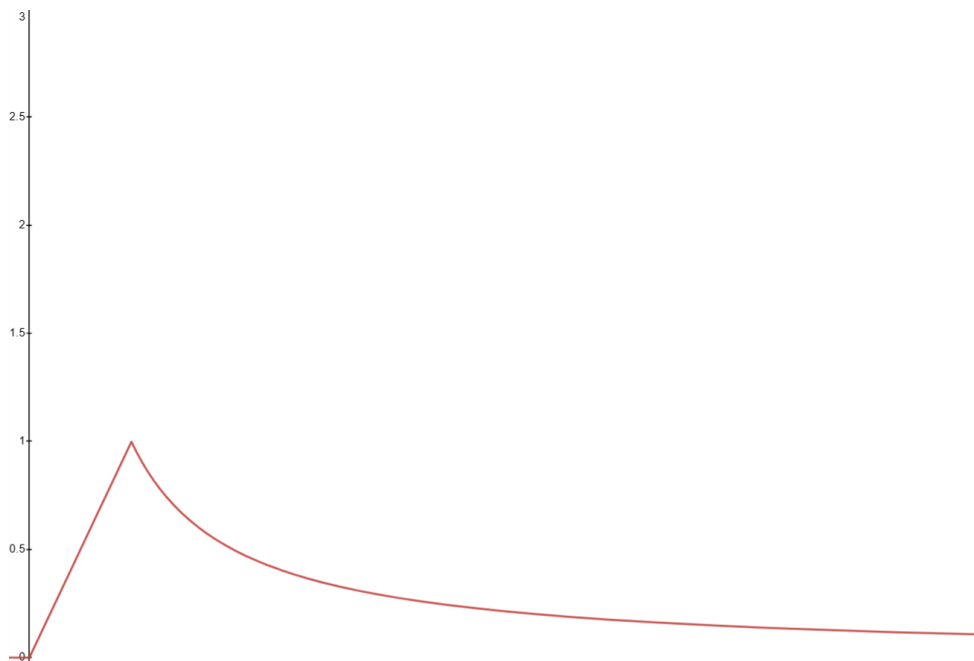
- There will be ten rounds.
 - Every round consists of a minigame and a leading question.
 - Minigames will be time-constrained & victory in these will lead to advanced power.
 - The minigame will be like the fastest finger first.
- Every correct answer account for 100 points for the first 5 rounds and the next five rounds 150 points.
- The winner of the minigame will get an opportunity to use a power.
 - Power: Hint for a leading question. (only five times)
 - Skip the following leading question for 50 points. (only twice)
 - Double Dip: Double answer for the leading question. (only thrice)
- There will be two free power-up cards for each team.
 - The first card lets them multiply their points 1.5 times for that question (only if the previous leading answer is correct)
 - The second card lets the card user lose point one-third of the points for a question—of the team of their choice; you can use this power on a particular team only twice throughout the game (only if the previous leading answer is correct)
- The result (total points) will only be shown to the participants at the end of all rounds.
- **Conflict:** In case of any conflict in answers, the coordinator's answer would be final.
- In case of a Tie in the final score, the team that won more minigames will be the final winner.

3. Approximation

Approximation is an event where the teams (less than four) will guess the value of a general trivia number, and receive points based on the closeness of their guess to the actual value.

- The closer the guess to the true value, the more points the team will be awarded.
- Hints can be given to the participants on each question. Hints can be blocked by agreement of at least 3 teams. Guessing the hint guarantees a minimum of 80 points.
- A virtual board will show their proximity to the guessed number for each team, live.
- For each question, a total of 2 mins. Total of 25 questions.
- If a team is found cheating, then they are disqualified. This is an in-person event and use of the internet is not allowed.
- The following function will be used to give points (x is the approximation proposed; a is the exact answer).

$$points(x) = 100 \times \begin{cases} \frac{x}{a}, & x \leq a \\ \frac{a}{x}, & x > a \end{cases}$$



4. Math Bingo

- Participants randomly fill each number once in the specified range (1 - 25) in the grid provided to them.
- The gamemaster picks a chit containing a question based on the round which is then written on the board. The question has a single numerical answer. The participant must cross off the number they arrived at if it exists within the range.
- The participant must shout BINGO! If their grid has 5 crosses on a single row, column or has crossed off all the numbers on either diagonal.
- There will be two rounds:
 - **round 1:** Geometry (1 minute each)
 - **round 2:** Calculus (2.5 minutes each))
- The time provided for solving each question in each round is decided and announced by the game-master before the beginning of each round along with the name of the round.
- The timer is started after the question has been completely written on the board.
- The answer for any question cannot be discussed with any volunteer or another participant until the end of each round. If found, the gamemaster may disqualify the participant from current and all further rounds.
- If any participant calls for a prize, the gamemaster checks the numbers cut by them against the answer key to the questions called out and if any incorrect cut, i.e. a number that is not the answer to any question called yet is found, the participant is disqualified for the round and their grid is kept with the gamemaster.
- The gamemaster may pose questions that may not lead to an answer within the specified number range (1-25). The team shall not cross off any number in this case or call for volunteers but rather wait for the next question to be announced.

5. Pictionary

This is a team game (Minimum 2, Maximum 4).

One member picks a chit with a mathematical term written on it. They must draw non-mathematical objects (no numbers or letters allowed) to have their team guess the term.

Host will give a small idea about the term so that no team member speaks anything mathematical. Mathematical terms shouldn't be written, nor they should come out of mouth.

- The winner of this game is decided by the maximum points. Whichever team gets max point wins the game.
- There shall be 4 rounds for this. The difficulty level in chits of a single round remains the same. Time allotted for each team in:
 - Round 1 = 2.5 min (30sec thinking time)
 - Round 2 = 2 min (20sec thinking time)
 - Round 3 = 1.5 min (10sec thinking time)
 - Round 4 = 1 min (5sec thinking time)
- A Member from a team will come and pick the chit. He will think in the thinking time before the round starts and he will suddenly start drawing nonmathematical terms. For e.g. – They get the chit Integration. They may draw a graph and try to color the area under the curve to make him understand that he is talking about integration.
- **SPEAKING IS PROHIBITED. ONLY DRAWING AND WRITING!**
- Every team gets 1 chance to take Coordinator's help, but He won't speak as well. Coordinator can be summoned anytime but only once in ENTIRE GAME but in last Round Coordinator won't help.
- Marks shall be deducted for Speaking mathematical terms depending on how great an impact it created for guessing. Deduction point varies from -1 to -5 (According to Coordinator, No fighting with him).
- Asking from Audience is strictly prohibited. Shall lead to disqualification from that round.
- Points chart will be announced after every round.

5.1 Grading

ADDITIONAL BONUS POINT (+5) IF GUESSED within 15 sec.

Round 1

If guessed in 0-2min = 10points.

If guessed in 2-2.5min = 8points.

Round 2

If guessed in 0-1min = 10points.

If guessed in 1-1.5min = 8points.

If guessed in 1.5-2min = 6points.

Round 3

If guessed in 0-1min = 10points.

If guessed in 1-1.5min = 5points.

Round 4

Points = $10 e^{-t}$ (Here t will be in 1 decimal place only and will be rounded down). There will be 3 or 4 Countdown clocks (If possible) and there will be an average of the time. So that we reduce the margin of error as nicely as possible.

6. Ankatakshri

- One person from each team will be called upon to randomly select a chit which contains the term. Then, they must sing a song of their choice which could help convey the chosen term to their fellow team members.
- Every round, a different person must select the chit (In case of less members the same person can come again).
- The set of allowed signs will be conveyed on the day of the event.
- Only Hindi/Regional Songs allowed.
- The term must not be used anywhere in the songs.
- There will be 2 rounds.
- Each team has 3 minutes to guess the term chosen.
- Every team will have unlimited guesses in the given time.
- +10/0 marking scheme will be followed.
- In case of a tie, the team which guesses their term in the least amount of time will be declared the winner amongst the teams in question.
- In case of any discrepancy, the coordinator's decision will be FINAL!!!
- The song ABCDEFGHI is not allowed.

7. Puzzle Battle

"Through the Looking-Glass" by Lewis Carroll is a whimsical and intricate tale that takes Alice on a fantastical journey through a mirror into a curious world where logic and absurdity intertwine. The story begins with Alice wondering what life is like on the other side of a looking glass, and before she knows it, she finds herself stepping through into a world that operates like a giant chessboard.

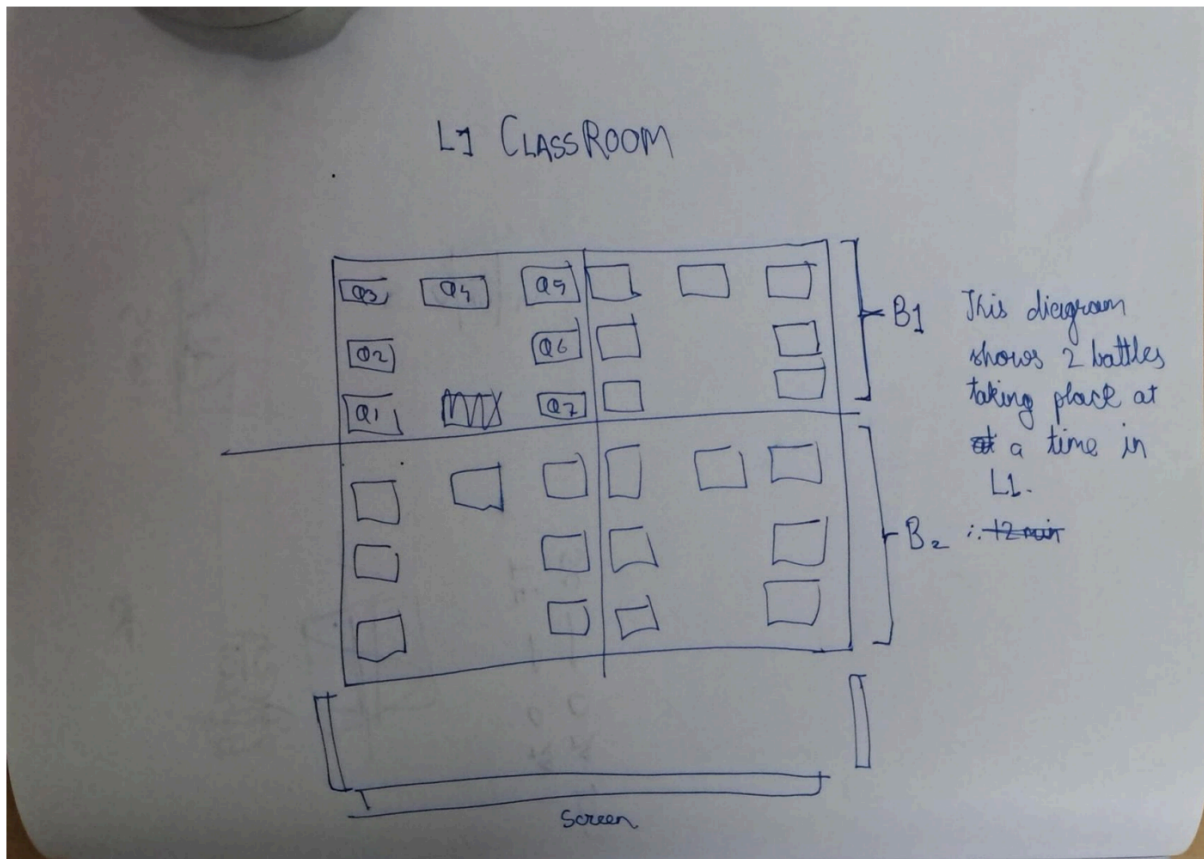
As Alice navigates through this mirror-reversed landscape, she encounters a host of peculiar characters, each more eccentric than the last. The Red Queen and the White Queen, personifications of opposing chess pieces, engage Alice in surreal conversations laden with wordplay and riddles. The Tweedle brothers, Tweedledee and Tweedledum, present Alice with a humorous and philosophical discourse on the nature of conflict and cooperation.

Throughout her journey, Alice interacts with talking flowers, a Cheshire Cat that can appear and disappear at will, and the enigmatic Humpty Dumpty. She also faces the challenge of traversing a brooding forest, attending a bizarre tea party with the Mad Hatter, March Hare, and Dormouse, and confronting the daunting Jabberwocky in a fantastical poem. The narrative is structured around a chess game, with Alice progressing through the squares as she encounters various characters and obstacles.

Carroll's narrative is a whimsical adventure and a clever exploration of language, logic, and the nature of reality. The story is infused with mathematical and linguistic puzzles, challenging Alice and readers alike to navigate the complexities of this dreamlike world. "Through the Looking-Glass" stands as a testament to Carroll's inventive storytelling, filled with delightful absurdities and thought-provoking moments that continue to captivate readers of all ages.

We want the teams to be in the Shoes of Alice and navigate their way through the puzzles.

1. It is a two-team faceoff. Each team has 2 or 3 players.
2. Each team has to solve Seven puzzles.
3. Puzzles will be arranged in Lecture Hall-1 in the pictured way. One battle consists of 2 teams competing. Puzzles will be arranged in an increasing order of difficulty.
4. The volunteer timer will start the stopwatch, indicating all the teams to start solving. When any team is done with the questions, they will signal the volunteer to note down their time taken from the stopwatch.
5. Notice that the teams have 12 minutes max to solve all the puzzles.



6. The answers to the puzzles are one word. Teams will write the answer on the paper provided beforehand and will submit the paper as soon as their time is stopped.
7. **Grading:** Questions have certain points associated with them based on difficulty level. The total number of points are to be noted. *No Negative marking.* Teams scoring same points will be judged based on timing.
8. There will be a Real-time excel sheet showcasing the leaderboard of the previous battles (if any)

8. Veni, Vidi, Vici,

Greetings, adventurers! If you're reading this, consider it an invitation to join and compete in my magnum opus - Fortitudo. I am Bourbaki, the creator of this hunt - a connoisseur of all things puzzling. Fortitudo is a virtual treasure hunt like no other; in this test of mathematical prowess and wit, you'll be solving riddles, deciphering clues and doing much more - all in a race to reach the final treasure and prove your mettle. Here, anything can be a clue - but all clues may not necessarily lead you in the right direction. So be careful, keep your wits about you and have fun!

8.1 General rules and regulations

- Veni, Vidi, Vici is an online treasure-hunt contest.
- A maximum of 3 members are allowed in a team.
- An individual may not be a part of more than one team.
- Cross Teaming is strictly prohibited, and any parties caught doing so will be immediately disqualified.
- It will be held from 6th February 2024, 2000 hours to 8th February 2024, 2359 hours.
- You will be given questions, and you must decipher the solution. Be careful with solutions, as the path to victory is nonlinear.
- Look out for clues and hints everywhere, including the URLs shared with you and all the details provided in the question. You can use Google, Wikipedia, or any other internet resource for help.

8.2 The event

- The event will be in the form of a treasure hunt, needing you to solve various riddles and decipher clues to reach the next stage.
- There are two types of levels - regular points and nodes. While regular points will guide you to move in the right direction, nodes are where you choose - and your choice decides how the game will progress.
- There are many paths to victory, so fret not and continue undoubtedly on the path you've chosen without worrying too much about how other adventures are faring. However, be warned: there are some red herrings sprinkled throughout to make it more amusing.
- There are various special prizes, not just for finishing the fastest - so do not lose hope until the end.
- Worry not; there is no limit to the number of hints and leads I'll hand out. Whenever the window is opened, you can ask as much as you want, and I'll answer as much as I want.
- To make this even more fun, there will be various little rewards along the way, too. The journey is a part of the destination, no?

- While there is no barrier to entry, the levels may use different codes and cyphers and may require you to combine the part you've been given as a query for a website, so some knowledge in the domain is appreciated. Some websites that will be used frequently are pastebin.com, imgur.com, and dcode.fr. Ciphers, code and encryptions like base64, rot13, and ASCII conversion will not be uncommon.
- As always, I may change the rules or introduce new ones at my discretion at any time. In case of any discrepancies, my decision will be final and binding.