



“WHAT’S YOUR FAVOURITE CURSED FOOD COMBINATION?”

Hello! It’s the start of a new September on campus, and that means fresh faces, welcome carnivals, EDM concerts, and huge lines for Samsung food, for some reason. Whether you’re one of those fresh faces or you’ve been reading **mathNEWS** for years, it can get a little hectic. Here: take this issue, grab a drink of choice from the Math C&D, and join me on the balcony behind the café. Isn’t that better?

I have a number of favourite spots to read **mathNEWS** on campus, but I think this balcony is at the top of my list. It’s quiet but not *too* quiet, and you get a beautiful backdrop of the rock garden next to QNC. You’ll have to enjoy it while it lasts — the weather won’t be this nice for too much longer, and they usually close it when snowfall gets too heavy. But that’s not until a few months from now — until then, why not flip through the rest of this issue, which has been meticulously crafted specifically for C&D balcony reading?

You’ll find reviews of public spaces, albums, anime, and Marineland; an insider look at our pizza selection process; baseball players with funny names. If you’re purposefully avoiding all those welcome events, you’ll also be able to read about what you’re missing out on in terms of food selection. Or if you’d rather be somewhere else entirely, one of our writers is in Denmark right now, so you could read about that.

Another cool thing about this balcony is it almost never gets affected by rain, so you can just kinda chill out here while it’s pouring sometimes. Most people don’t know about this, so often you just get the whole balcony to yourself. Pretty cool.

Anyway, I hope you’re all enjoying the first couple weeks back on campus, whether you’re partaking in the various welcome activities or chilling on the balcony like I am. My “orientation” happened during the COVID lockdown, so I never had a super strong connection to these types of activities, but I’m sure they’re a lot of fun. It’s nice to be able to relax for a bit before classwork and midterms start piling up.

What does Samsung food taste like, by the way? Plastic? Battery acid? Washing machines?

derailed
Editor, **mathNEWS**

befuddled
Editor, **mathNEWS**

NO PUN INDENTED	Is it unoriginal to say ketchup and macaroni?
USMAN!	Hot dog with ketchup, mustard and chocolate chips
NIKE	sriracha and ketchup (especially on hashbrowns)
ANDOOII	Cream of mushroom lazeez (lazeez & cream of mushroom soup)
ERALOGOS	Hawaiian pizza with durian as crust filling
DICK SMITHERS	Beef fizz
AKEIJIN	brain soup with bat
0.423	fried coke
SHAHABEE	Don't ask Alina
YALEVOYLIAN	A mix of all seven varieties of vinegar that I have in my pantry
PENCIL	Chocolate sauce on croutons
LARS NOOTBAAR	The Pizza Nova menu and mathNEWS writers
APHF	Ketchup and a doll I found in my deceased grandma's attic whose eyes seem to follow me across the room
MOLASSES	slice of baloney. spread with peanut butter. roll.
RORDON GAMSAY	ketchup with ketchup
DOLLAR STORE PERSON	I don't know if this is cursed, but low sodium Triscuits + salsa hits so good
BIG A	plain bread and cold cuts (separate and scrumptious)
TOTALLY UNUNIMODULAR	Ice Cream + Toaster Waffle sandwich
NARF DERT	My answer remains unchanged from 142.5: Mashed potatoes and cornflakes :)
VERDANIK	Instant noodles and crippling assignment anxiety
SUNRISE PARABELLUM	peanut bodker, credit to writer mobpsychofan

ARTICLE OF THE ISSUE

You’ve seen **mathNEWS**-chan on our covers for years — in the rain, on a bench, at Lazeez. Now, it’s time to see her face her biggest challenge yet: entering the workforce. Congratulations to snowdozer for **mathNEWS netWORK 1**. Come by the office to pick up your \$25 Conestoga Mall gift card.

Are we allowed to have two ISSNs?

DAVID TERESI, **mathNEWS** EDITOR FOR FALL 2024
ALONG WITH OWEN GALLAGHER, SARA NAYAR,
ISABELA SOUZA, RIVER STANLEY, AND JUSTIN YOUNG

mathASKS 156.1

FEATURING LECTURER FAISAL AL-FAISAL

USMAN!: HOW DID YOU END UP WITH THE NAME “FAISAL THE FAISAL?”

I get this question a lot. My last name is actually not “the Faisal.” In Arabic, there are two distinct “al” prefixes. One of them translates to “the,” while the other—the one in my last name—translates roughly to “house of.” (Think “house” like House Stark in Game of Thrones.)

So my name is actually “Faisal of House Faisal.” The other Faisal is my great grandfather. Of course, my grandchildren will be led to believe that I’m the Faisal in their last name.

YY: HOW DO YOU ACTUALLY FEEL ABOUT STUPID QUESTIONS?

How kind of you to demonstrate with an example. :)

In all seriousness, I think stupid questions are an important part of the learning process. When you’re trying to learn a subject, be it math or whatever, you should ask a lot of questions. Invariably, a lot of them will end up being stupid questions, but that’s okay. The important thing is to try your best to **answer these questions yourself**. I think a lot of people forgo this step.

NAZZ: PEDAGOGICALLY, DO YOU THINK GROUPS OR RINGS ARE A BETTER INTRODUCTION TO ABSTRACT ALGEBRA, AND WHY?

Hmm. I think you can make a strong argument for either. However, if I really had to pick one, I would choose rings. A lot of the elementary structure theory will already be familiar from years of working with integers and polynomials. Pedagogically, it’s hard to overestimate the importance of familiarity. The structure theory of groups will definitely be less familiar.

The other thing that comes to mind is that taking quotients is easier to explain in the context of rings; the notion of an ideal is much less opaque than that of a normal subgroup.

I think the best approach, however, is one that talks about both. Start with rings and let groups naturally appear. This is what happened historically anyway. If you’re working in the integers mod n (the ring $\mathbb{Z}/n\mathbb{Z}$), then multiplicative questions naturally put you in the group of units mod n , and then you organically discover things like the notion of order and Lagrange’s theorem (just like Fermat and Euler had discovered).

MOLASSES: HOW DO YOU, AS AN ADULT BEYOND UNIVERSITY LIFE, MEET NEW FRIENDS AND MAINTAIN FRIENDSHIPS?

Great question. I’ve wondered about this a lot. I am very fortunate in that, at this point in my life, a lot of my university friends are my everyday friends—despite all of us being many years removed from university. It wasn’t always like this.

When I was finishing up graduate school in Toronto, almost everyone I knew had left or was leaving the city. At that time, I wasn’t on campus a lot. I felt very isolated. It was very easy to make acquaintances but seemingly impossible to make friends. What I finally discovered is that the key to making friends as an adult is repeated exposure to the same group of people. (If you think about it, this is how we make friends our whole lives. We’re stuck in schools with the same people and we find among them a group of weirdos that we call friends.)

What worked for me was participating in a competitive sport. This particular sport required multiple training sessions every week. I ended up seeing the same people over and over again, and after a while we became close friends. It helped that we already had a hobby in common.

__INIT__: FAVOURITE NUMBER?

Probably the primitive n^{th} root of unity $\exp(2\pi i/n)$.

If that’s cheating and you want a single, specific number, then maybe Brun’s constant. Brun proved that the sum of reciprocal of twin primes $(\frac{1}{3} + \frac{1}{5}) + (\frac{1}{5} + \frac{1}{7}) + (\frac{1}{11} + \frac{1}{13}) + \dots$ converges to a real number, which is called Brun’s constant. This is fascinating because we don’t know whether there are infinitely many twin primes. (You should also check out the “In popular culture” section of the Wikipedia entry for Brun’s theorem.)

If you want something a little more concrete, then I would say the prime number 691. Ramanujan discovered a congruence mod 691 between two certain number theoretic quantities. This isn’t the place to get into the details, but I’ll just mention that the congruence in retrospect can be explained by some really incredible 20th century mathematics. I’ve never really felt any connection to specific integers but 691 has always stuck in my mind for this reason.

SQRT(CAUSE): FOR OUR ENGINEERING STUDENT READERSHIP, HOW DOES THE MATH TUTORING CENTRE OPERATE DIFFERENTLY FROM THE WEEF TA OFFICE?

Both are great resources. They’re very similar, though I believe the Math Tutoring Centre (TC) is a bigger operation. My understanding is that all WEEF (now FYE) TAs are full-time co-op students—so there are only a handful of them for each of the first-year engineering courses. On the other hand, in the Math TC we hire a mix of full-time tutors (undergrad co-ops) and part-time tutors (grad and undergrad students). This term, we have 50 part-time and 4 full-time student tutors working in the Math (TC).

If you’re struggling with your MATH 1XX or 2XX courses, then the Math TC is a great place to visit! We’re fortunate to have many outstanding tutors.

SAVE THE PRINCESS ORIGINAL*

**ALTHOUGH IT IS NOT YET CLEAR THAT THE PRINCESS ORIGINAL IS IN DANGER*

I would like to share with you some news. Some of it I find concerning.

PART 1: PRINCESS CINEMAS AND THE HISTORIC HUETHER HOTEL

Princess Cinemas is an independent and locally owned cinema comprising two locations: the Princess Original, opened in 1985, and Princess Twin, opened right across the street in 2003.

The Huether Hotel was first built in 1855, although the building we'd now recognize wouldn't be built until 1877. In 1953, the (by now historic) Huether Hotel was purchased by John Adlys. For the past three generations, the Adlys family has continued to own and operate the historic Huether Hotel. Critically, because the historic Huether Hotel is so old, parts of it are historically designated.¹

When expanding in 2003, Princess Cinemas purchased the building for the Princess Twin, but for the Princess Original they rent space in the historic Huether Hotel and have been doing so for almost forty years. Between 2012 and 2019, the space was rented on a month-by-month basis. In April of 2019, a rent dispute became public when John Tutt, owner of Princess Cinemas, said he was informed by the Adlys Family that another company had signed a five-year lease for the space, and that the cinema had to be out by June. When the Adlys Family released a statement with their side of the story, they stated that they were surprised to hear that receiving the notice of a rent increase was a shock to Tutt. They proceeded to admit that a staff member had been misinformed and had relayed a false message about a new tenant signing the lease, and that, in reality, no other lease had been signed. Princess Cinemas contends that the staff members mentioned in the statement were Sonia and David Adlys. Weeks later, amidst the public outcry, the Adlys Family reversed the eviction, and the Princess Original has continued running without incident since.²

PART 2: ESTABLISH PROPERTIES' REDEVELOPMENT PLANS

Establish Properties is a private equity and real estate firm founded in 2022 by labour relations representative and business consultant Harpinder Sandhu and Laurier economics grad Richard Vu. In August of 2024, it was announced that the Adlys Family had partnered with Establish Properties to revitalize the historic Huether Hotel—to build long-term rental units and an arts hub.

Establish Properties wants to create upwards of 500 units. According to Sandhu, the Adlys Family and Establish Properties will jointly own the Huether Hotel property. The family will oversee day-to-day operations and Establish Properties will oversee the demolition of most of the existing building and construction of a new, large apartment building. The process is slow, Sandhu and Vu don't plan to have shovels

in the ground at the historic Huether Hotel for the next two years.

When poking around, I am struck by how small and how new Establish Properties seems. Their LinkedIn indicates three employees. They list five projects on their website—one on King Street North in Waterloo (almost certainly the historic Huether Hotel) and four in British Columbia. Establish Properties has CGI renders for three of the four BC projects. These projects are no more than six stories tall and have—at most—150 units. From a brief search on Google Street View, I could not find any evidence that (as of mid-2023) any of these BC projects had broken ground, and as far as I can tell none of these projects are working around historic sites either.³

The news articles I read covering this story all mention that the plan has not yet been approved. When I called the City Council coordinator, they told me that no development proposal had yet been submitted for the historic Huether Hotel. Real estate development is slow.

PART 3: WHY CARE ABOUT PRINCESS CINEMAS?

I must come clean. I am biased. I love the Princess Original. The Princess Twin generally shows popular mainstream movies and new specialty films—showings more typical of your average movie theatre. The Princess Original is unbound by such restrictions. I don't want you to get the impression that the Original caters only to cinephiles: if you want to watch *The Room* (2003), widely regarded as one of the worst movies of all time, in theatres, the Original is the place for you. Older movies, movies that benefit greatly from the theatre experience, also end up at the Original. Annual Halloween showings of *The Rocky Horror Picture Show* (1975), insane low-budget indie films like *Hundreds of Beavers* (2022), *House* (1977)—a movie made because the studio was tired of losing money on movies with “comprehensible plots”—have all only been available at the Original. The Princess Original is a truly unique fixture of Waterloo.

I fear the worst. Noisy construction on a huge complex could take years, and it would disrupt the movie experience. I am afraid that the Adlys Family and Establish Properties will use the inability of the Princess Original to operate as usual as an excuse to evict the Original and replace it with condos.

This would be a loss.

PART 4: WHAT YOU CAN DO

In 2019, what saved the Princess Original was the community backlash against the eviction. The outpouring of love and support convinced the Adlys Family to relent. In the end, I guess my call to action is to ask you to love the Princess Original as I do. I ask you to check the calendar a couple times a term and see if anything seems interesting. Some months you won't find anything, but other months you'll find movies

you can't see in theatres anywhere else. With your student ID, a ticket costs only \$10.50.

There are many things I do not know. I do not know how much of the historic Huether Hotel is protected, or what is going on behind the scenes between the Adlys Family and Princess Cinemas. I do not know how to weigh the need for housing with the cultural importance of the Princess Original. Ultimately, I do not know what will happen. Nor does John Tutt, although he was quoted saying the new direction is a positive step.

We can only hope for the best.

aphf

1. The Waterloo Region Record (along with every other news outlet reporting on this) say only certain parts of the historic Huether Hotel, such as the facade, are designated. The Canadian Register of Historic Places website does not seem to make such a distinction.
2. Without incident apart from COVID-19, that is.
3. I didn't reach out to Establish Properties for comment because this is a mathNEWS article. If any of them see this and feel unrepresented, they can reach me at a21737074481@gmail.com.

Sources:

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- <https://huetherhotel.com/About-Us.htm>
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- <https://x.com/princesscinemas/status/1120174878949122051>

PHOENIX WRIGHT: ACE ATTORNEY EPISODES RANKING

1. Turnabout Goodbyes
2. Rise From the Ashes
3. Turnabout Sisters
4. Turnabout Samurai
5. The First Turnabout

Fried Rice

UNDERWATER HOCKEY CLUB!

If you like:

- silly sports
- cool people
- getting a fun story to tell
- free (for try-it sessions) entertainment
- pina coladas
- getting caught in the rain

Look no further than the underwater hockey club! As long as you vaguely know how to swim, underwater hockey is a crazy sport that I think everyone should try at least once. We're running free try-it sessions on Monday September 16th/23rd and Friday September 20th/27th 9–10pm at the PAC pool, so you can see if it's for you. If you aren't convinced yet: after graduation, you'll probably have way fewer opportunities to try underwater hockey. It's a great way to try something new, to meet new people, and I think it's super fun! If you end up getting into it, we have practices, social events, and we even go to a few tournaments.

I realize I forgot to describe underwater hockey: basically, you're pushing a weighted puck underwater along the bottom of the pool with a mini hockey stick while swimming with a snorkel and fins. If it's difficult to visualize, come see in-person at the try-it sessions :)

peacelovemath

N REASONS YOU SHOULD NOT WRITE MATYN ÷ × ARTICL3S ON MOBILE

AKA. HOW TO ANNOY THE EDITORZ WITH WHATEVER THE FU KT HIS TURNED OU5 TO BE.

It iz often fecommended to bring a laptop to production nights so that one can write their articles in a coherent manner. Unfortunately for this writer, because 5thr diameter form a different ity, and because th3re are min8knl outlets in MC 2034, on3 did not bring a lPtop to write said articles. Instead, the phrase "sorry I'm on mobile" wrings wayyy tooo true, and one is left with this fu king mess of a diatribe. If you can attempt to form a tangieblr thought from these rMblings, good for you. You get a cookie.

Narf Dert

Apologies to the editors for having to parse this absolute d4iv3lb. You also get oooies. Please make yourself availabl3 to MacArthur Hall on Queen's University campus to collect your cookies.

A BBA'S GUIDE TO FAILING MATH

Not too long ago in a university not too far away, there lay a BBA student. While their IQ may be low, and their drinking tolerance too high, they had only one goal: to get a math degree. How do I know about the details of this wicked and cruel story? Why, because that that person is me. Mistakes from choosing to be in double degree? Mistakes from deciding to grind endless optimization for the rest of your life? Absolutely not! Because a BBA makes no mistakes! And with this guide, you will have no fear about “accidentally passing a course.”

Taking your first steps into university as a business student, it is key to keep your ego high. There is no course that is too hard for you, and you need to make sure that everyone is aware of that fact. I personally made great effort to boast about my 83 in quiz 1 of MATH 137 because I am too smart for this (and definitely not due to doing the exact same things in high school). Do your peers need to know that the next 3 quizzes consisted of a 44, 40 and 52 respectively? Of course not! If you've boasted enough, you'll have already been deemed a god and no longer have the need.

“What about algebra?” I hear you asking. That's a great question. Let me teach you the course right now. If you add a not in front of a statement it becomes the opposite. If you need to prove something, use contradiction and avoid induction. They also did something else with modules, but with a BBAs attention span, I'd stopped listening by then. As for Lin Alg, if you can draw 2 intersecting lines it's called a plane or something. How does it relate to aviation? Your idea is as good as mine.

Once you get to second year math gets a whole lot more fun. STAT 230 teaches you how to sports bet and STAT 231 teaches you that you don't know what stats is. By second year my reputation was starting to drop—my party invites decreased, and I started to join math clubs! However, just remember, a 33% on any exam (including STAT 231) is more than enough to redeem your BBA-ness to the math community.

Moving onto CO... wow, is that a different beast. Never in my life did I think I'd be grinding *TWO pHAsE siMPLeX* at 3am in Hagey Hall the night before an econ exam (which, for the record, did not get studied for). I swore to myself never again... until the next term because why wouldn't double degree need CO 370 as well.

But hey don't forget about PMath!—some kid sitting beside me reading over my shoulder. Clearly, he didn't read the title because no BBA would choose to do PMath. But for those still curious, PMath is for the people who like staring at a wall and mentally writing out theoretical nonsense.

Alas, there are so many more math courses to fail, but as a BBA, I can only use half the allotted word count provided for this article (can't put in too much effort or I'll raise the standards). Thus, I leave you <the incoming BBA looking to pretend to make a difference> these magical words: use your nepotism wisely, and you can make even the smartest and hardest working math students wish they lived your simple life.

The Sheep of Wallstreet

G THINGS FROM PARIS THIS WEEKEND

I ONLY HAD ONE FULL DAY THERE SO I HAD TO MAKE THE MOST OF IT

- Visited the Eiffel Tower, Arc de Triomphe, Place de la Concorde, and Notre Dame.
- Talked my way out of a €50 fine (that I totally deserved) from some police officers.
- Skipped out on my paid ticket to the Paris 2024 Paralympic Track and Field Finals to watch a string sextet performance of Vivaldi's 4 Seasons, with front-row seats.
- Bought Paris Olympics 2024 merch anyway.
- Went to a super posh Paris-themed McDonald's.
- Ran the length of the Champs-Élysées and logged it on Strava as a workout.
- Got a selfie with the Mona Lisa.
- Watched some public riverside ballroom dancing.
- Sat with a speedcuber on the bus. We decided to do a solve with the same scramble as a race, and he got a 12.2 second solve, his first PB in months (prev. 13.5s).
- Spent ten hours watching the World Blitz Chess Championship semi-final matches—Including Magnus Carlsen v Hans Niemann live.

- Shook Levy Rozman's hand, and told him the score of the Hans <> Magnus match.
- After we were both gifted free dinner, a friend bought me a taxi home. Thanks Alex!

Speaking of friends, the most fun part of the trip was when I got to share the experiences with other people. Some were random folks I met along the way, others were old friends who found themselves in France at the same time, and still others were students who also came from Copenhagen.

Speaking of Copenhagen, that's the reason I could be in Paris for such a short time: I'm studying at Denmark Technical University at the moment. I wrote an article about that too actually, it's elsewhere in this issue.

Speaking of this issue, I hope you readers enjoy the rest of the first **mathNEWS** issue of the 2024–2025 school year!

no pun indented

WUSA'S WELCOME BRUNCH REVIEW

Part of WUSA's Welcome Week was a brunch in the BMH Green on Monday, September 9th. Allow me to document this experience! As I made my way to the BMH green at around 9 A.M., a tirade of hundreds of students were being led from the green to line up inside SLC. Curious, I followed the line to see it ending at the great hall of SLC. It was indeed a line up for the brunch! Steamtables were scattered in the hall, so I joined the line, which went from the hall, past the elevator, around Brubakers, up the ramp, and in front of the PAC desk. This is at 9 A.M. and it didn't start for another half hour.

So, it was not, in fact, on the BMH green. Yet, by 9:30, the line looped around the back of PAC and back into Brubaker's. By now, two people had come up to me and asked what the heck the lineup was for. "Pancakes!" I said excitedly, not knowing what awaited me.

9:31 brought the first bit of movement to the line. The smell of baked food wafted through the corridor. On WUSA's website, I was promised vegan options, but was reminded of last year's hot chocolate fiasco, where I was promised a wintery vegan delight, but instead waited in a line for twenty minutes to be told that the vegan caterer never showed up. I walked in to this event with my expectations on the floor.

The movement in the line rippled in three-minute intervals, and by 9:45 we had made it to the entrance of the Great Hall. People walked past us with plates, packed with croissants, doughnuts and fruits, but I was yet to see any of the pancakes that the WUSA website advertised.

At the front of the line, they directed the dietary restriction squad to the back row of tables, where a buffet style was in full swing. There was a fruit salad that I got a scoop of, but nothing on the table had obvious labels, which is quite important to many folks for navigating food. So, I skipped over the mystery croissants and looked at quiches, where someone behind the table was busily pointing at the ones that were vegan and gluten free. So, I took a quiche, and was told that there were vegan sausages at the end of the table. Another person and I stood at the end of the table then, alone and lost, wondering where the vegan sausages were. There weren't any in sight, so we made our way to the drink table where there was juice. And finally, there was a Sephora table giving away free little Sephora baggies, but I was a couple people behind the last one. There were supposed to be enough for the first 500 people, so I guess I underestimated just how many people were in the line in front of me, unless there were less than 500 bags.

My experience is certainly that of a minority of students, so I asked some others in the SLC lounge how their meal was! The people with Sephora bags typically gave a higher score than those without. Comments included that the doughnut was good, the line moved fast, and many people said the fruit salad was exquisitely tasty. One student wondered, "Where were the pancakes?" He was very distressed that there were no pancakes like on the event poster.

In closing, if you have dietary restrictions, the event was likely too busy to be certain you got the correct food, but if that didn't matter to you, everything was good. I find it a little sad that campus doesn't have an event service that can supply dishes, because a lot of disposable plates and cutlery were used, and were not properly sorted into the designated garbage and recycling bins. And that's not WUSA's fault, that's all of our faults, so do better.

P.S. If you didn't get a Sephora bag, you weren't missing out on too much other than a couple samples and a thing of face wipes.

nike

N REASONS TO CONSIDER DROPPING YOUR CLASS

IF YOU FEEL YOU NEED TO DROP A CLASS, TRUST YOUR INSTINCTS. DROPPING IS BETTER THAN FAILING!

- You end up crying on your way home from your second class because you didn't understand *anything* that was said
- You receive zeroes on assignment/quiz questions and cannot understand why despite talking to your instructor and/or TAs about where you went wrong in the material because it's just not clicking into place for you
- You do not enjoy the material at all or the way you have to complete the work (*shakes fist at large essay word count requirements*)
- The midterm did not go well and you do not feel you will pass the weighted exam requirement for your course
- You are struggling with the overall workload for the course with however many readings and/or labs and/or assessments you have to complete
- You don't feel you can succeed, no matter what happens next in the course or what grade allocation scheme is applied
- You would rather attempt the course later when you feel you can handle it/have figured out how to actually study for it (especially if it's a required course for your degree)

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HENRY HENRY

BASEBALL CONTENT FOR PEOPLE THAT DON'T WATCH BASEBALL PART 2¹

This summer, as there were no Kitchener Rangers hockey games scheduled, I persuaded my student society that we should go to a baseball game. What options are there for baseball in K-W you ask? Well, the Kitchener Panthers of the Intercounty Baseball League (IBL), of course!

The IBL is one of the many professional “Independent Leagues” that play in markets in which Major League Baseball doesn’t cover. Their rosters are usually filled with post-college players who just weren’t good enough to be drafted into MLB; those who were, but were quickly cut; and the odd washed up marginal MLB player. However, they are an important lifeline for live baseball in many small communities. Despite being around since 1919, the IBL is seen as one of the lowest level independent leagues in North America, lacking the respect given to many leagues formed in the 1990s. *The Only Rule is it Has to Work*,² a book about 2 inexperienced journalists attempting to manage a team in the Pecos League of California, and the only piece of media I’ve ever seen mention the league, invoked the IBL only as the one league worse than theirs. They estimated it as 8 or 9 degrees of talent levels removed from MLB. Almost all who play here won’t make it any further.

The game we watched was the Kitchener Panthers against the Chatham-Kent Barnstormers (who have awesome pinstripe jerseys with a clipart bus patch stitched on their ass). The game was at Jack Couch Park, a field sandwiched between the backside of the Aud and Conestoga Parkway. A paltry total of 300 were in attendance there, low even for an IBL game. We got a deal on tickets for \$8 a person. It was a cold night, which the unforgiving aluminum bleacher seats did not help with, but there was beauty there.

An osprey, who had made its nest on one of the lights illuminating the field, swooped around the diamond searching for food to provide to its visible chicks. We bought hot dogs from the concession booth, or, should I say, the one man operating a single barbecue. My friends and I sat amongst the hundred or so fans who had traveled the two hours from Chatham to Kitchener on a cold Thursday in late June. They knew the names of all the players, almost all of whom would not progress past this level, and they watched them intently. The crack of the bat and the pop of the glove were as comforting as ever.



Before the game, I looked up the roster of both teams for the unlikely chance I’d see a player that I recognized. I didn’t, but I did come across something in the *The Chatham Daily News*, interestingly called “We’re going to punch everyone in the mouth.”³ Amongst the impassioned discussion about proving everyone wrong in the team’s first year, the *Roster Notes* section at the article’s bottom mentioned that pitcher *Henry Henry* was released to join the New York Mets’ Florida Coast minor league affiliate. *Henry Henry*, did I read that right?

Henry Henry was born December 17th, 1998 in San Cristobal, Dominican Republic. Henry was signed by the San Diego Padres at age 17 in 2015 for an undisclosed sum⁴ and was transferred to the Peoria Padres in Arizona the next year. He toiled in the Padres farm system until 2023, when the team released him, after which he then signed with the Chatham-Kent Barnstormers of the IBL.

Beyond this, there’s not much online about Henry Henry. I couldn’t find any social media accounts. In 2021, one of the longest descriptions of his talent was in the *Honourable Mentions* section of an article ranking the top prospects of the Padres describing him as “a loose, low three-quarters relief prospect whose fastball plays beneath his raw arm strength.”⁵ Not exactly a glowing review.

In a more recent 2022 article, “Ranking the best minor league player names from Walking Cabrera to River Town,” Henry Henry ranked #3, between Zebulon Vermillion and Owen Sharts. The article stated, “He was once an exciting Padres prospect from the Dominican Republic, although he has since fallen off, posting a 5.20 ERA out of the bullpen with Double-A San Antonio this season. Perhaps that’s why no one has bothered to record the origins of his name. It is as inscrutable as the Mona Lisa’s smile, leaving us nothing to do but appreciate the mystery.”⁶

The year this article was published, the Padres, who must have agreed that this was the end of the rope for Henry, released him from the team. This is the end of the line for many players, **but not for Henry Henry**. He joined with one of the few teams that would sign him, the lowly Chatham-Kent Barnstormers of the IBL. He then proceeded to pitch his ass-patch off and did what many who played there could not — make it back to organized baseball.⁷ The New York Mets signed him on June 12th, and he has remained in their minor league system every since.



People have asked me why I love baseball. There’s so many other sports out there. Many with a faster pace and more action. Many that I could more easily talk to people about. Many with a median fanbase age below 50. I have struggled with this answer before. I love it for a lot of reasons, many of which have fueled *Baseball Content for People That Don’t Watch Baseball*. But the reason I love it the most is because of all the little intricate details living within every pitch. Details so small and unnoticed, that for a few moments, you can take them completely for yourself. The bird that swoops down onto the field. The patch of a coach bus, befuddlingly stitched on to the butt of a uniform, of a team of a town of 44,000. A man named Henry Henry, living in obscurity in a foreign country, trying to make his dreams come true.

Lars Nootbaar

1. Read Part 1.5 of Baseball Content for People That Don't Watch Baseball in **mathNEWS** 154.5, and Part 1 in **mathNEWS** 151.4.
2. Great book by Ben Lindbergh and Sam Miller, would recommend anyone read.
3. <https://www.chathamdailynews.ca/sports/local-sports/were-going-to-punch-everyone-in-the-mouth>
4. There was been much controversy in MLB with its signing of Latin baseball players at extremely young ages, which has been argued as predatory
5. <https://digitalcommons.wcl.american.edu/cgi/viewcontent.cgi?article=2031&context=hrbrief>
6. <https://blogs.fangraphs.com/top-39-prospects-san-diego-padres/>
7. This article actually predicted he would sign with the Mets so that he could be Henry Henry from New York, New York. <https://www.forbes.com/sites/chuckmurr/2023/12/08/can-any-of-nl-teams-289-minor-free-agents-help-in-2024/>

HOW TO AUDIO ENGINEER

1. Using your favorite DAW, compose a song (important: don't name any of the tracks)
2. On each track, add your favorite equalizer as an FX (important: don't group tracks and apply one to a group, this is lazy and ruins the immersion)
3. On stuff that sounds high, apply a high pass filter and completely kill anything under 1000 Hz, and on stuff that sounds low, do the inverse
4. On each track, add your favorite compressor as an FX
5. Enable auto makeup, set the compression trigger to 1 dB, and set the ratio above 2.0
6. If the high end doesn't sound crisp enough, apply an exciter to all the high sounding stuff
7. If there isn't enough low end, get a synth tom and pitch it down by 24 semitones and play it once per beat
8. If using FL Studio, apply Soundgoodizer to everything (preset A) and crank up to max. Otherwise, apply your favorite multiband compressor and choose a random preset

PART 2: MASTERING

1. Apply your favorite equalizer as an FX to the master track
2. Use a high pass filter
3. If using FL Studio, apply Soundgoodizer (preset C) and crank up to max. Otherwise, apply your favorite multiband compressor and choose a random preset
4. If the audio is clipping, apply a compressor and use the same method as step 5 from the previous section but turn off auto makeup, then apply a limiter, then turn the master volume up a bunch (actually do this regardless of whether it's clipping or not)
5. If using FL Studio, apply Soundgoodizer (preset B) and crank up to max. Otherwise, apply your favorite multiband compressor and choose a random preset

Your song is now better mixed and mastered than most tracks on Spotify, congratulations!

epic_waterman

ITS PURPOSE IS TO MAKE ME SMILE.

On my shelf sits a laptop sleeve. It remains pristine, still in its original condition. I tried to fit it in my laptop bag and backpack, but it's always been awkward taking it out, peeling the layers to get to my computer. And so it stays on my shelf.

Although I don't use it for its intended purpose, it has become one of my favourite possessions. On its face stand a cast of characters from my favourite shows, drawn in a beautiful minimalist style. Sometimes I feel bad that it just sits there, as this birthday gift was meant to be shown off. But it often interferes with how I carry my laptop, so I leave it on display on the shelf.

If you look closer, you'll see its life didn't begin as a laptop sleeve. Little remnants are still present that show its previous incarnation, tiny details that most people would miss. But to me these artifacts tell an amazing story. A story of friendship, seeking out what I love and combining it into an art piece. A story of patience, researching the personality of each

character. A story of persistence, needing to adapt the medium when faced with hardship. All the time and effort that went into this still baffles me.

And it all culminated in a single moment one winter evening. I thought the excitement would be ruined as I knew what I was unwrapping, but as opened the box a huge smile grew across my face. It was clear that my happiness was hard to hide by the satisfied expression of my friend's face. Even now, every time I take a look at it, every time I catch it from the corner of my eye as I leave my room, every time I hold it in my arms, I get the same happy feeling. Even though at times I feel guilty that I don't take the laptop sleeve along with me, I understand that was never the true intention. I know it is meant to make me giddy like the first time I saw it, to remind me of all the feeling I had with these characters. I know its purpose is to make me smile. And smile I do.

Totally Ununimodular

mathNEWS netWORK 1



IN THE FRANTIC TRANSITION FROM HIGH SCHOOL TO UNIVERSITY, SOME FRESHMEN HAVE SEEN THEIR WHOLE LIVES GET TURNED UPSIDE DOWN.

IT WAS SO WEIRD WAKING UP IN A NEW BED, GETTING READY IN A SHARED WASHROOM, AND HAVING TO WALK AROUND ON MY HANDS.

I HAD TO TALK TO A STRANGER INSTEAD OF MY PARENTS OVER BREAKFAST. AFTERWARDS, I HAD TO WASH THE DISHES WITH MY LEGS.

IT WAS LIKE THE WHOLE WORLD HAD FLIPPED ON ITS HEAD.

A FEELING WE CAN ALL RELATE TO. THANKFULLY, ORIENTATION WEEK USUALLY GETS THESE UPTURNED UNDERGRADS BACK ON THEIR FEET.

EXCLUSIVE INTERVIEW WITH THE WEBSITE DESIGNER OF WATERLOOWORKS!

TELL US ABOUT YOUR INSPIRATIONS FOR THE SITE.

CERTAINLY. IT IS OF MY OPINION THAT A GOOD DESIGN SHOULD EMPHASIZE THE EMOTION EVOKED BY THE WEBSITE.

IN THE CASE OF WATERLOOWORKS, THE EMOTION EVOKED IS DESPAIR. DROPPED IN THE ARCTIC OCEAN WITH NO LAND IN SIGHT. EACH APPLICATION, EACH STROKE OF THE ARM, SWIMS YOU TO YET ANOTHER ENDLESS SWATCH OF FRIGID WATER. YOUR MUSCLES ACHES; YOU WONDER IF YOU SHOULD SIMPLY STOP SWIMMING.

SOUNDS ROUGH. CAN'T FIND A JOB?

IF I COULD, I WOULDN'T BE DESIGNING WEBSITES FOR WATERLOO.

TODAY, LOOKS LIKE THEY'RE FINALLY FIXING THE BIG PROBLEM WITH E5 AND E7?!

YEAH, THIS E5/E7 THING HAS BEEN CONFUSING STUDENTS FOR THE LONGEST TIME NOW.

THE BUILDING IS SPLIT INTO TWO HALVES. THE FRONT HALF'S E5 AND THE BACK HALF'S E7.

AND THAT'S NICE AND ALL, BUT IT'S NOT ENOUGH.

IF YOUR FRIEND TELLS YOU, "MEET ME IN E7", YOU STILL HAVE TO SEARCH HALF THE BUILDING TO FIND THEM.

SO WE'RE SUBDIVIDING THE BUILDING FURTHER.

NOW YOU CAN PINPOINT YOUR FRIENDS WITH EASE! AS AN ENGINEER, I THINK IT'S QUITE THE ELEGANT SOLUTION.

BREAKING NEWS! THIS GOOSE LOOKS KINDA LIKE VIVEK GOEL!

GOEL NOT GOEL

YEAH, I GET TOLD THIS A LOT. THE RESEMBLANCE IS CERTAINLY THERE.

IT'S KINDA ANNOYING, ACTUALLY.

PEOPLE KEEP STOPPING ME TO ASK ABOUT INVESTMENTS OR TELL ME HOW USELESS MY EMAILS ARE. LIKE, I DON'T KNOW JACK. I'M A GOOSE.

THANKFULLY, THERE'S AN EASY WAY TO TELL THE DIFFERENCE.

VIVEK GOEL IS SLIGHTLY TALLER THAN THE GOOSE.

AND WE'RE NEARING THE END OF OUR PROGRAM! ONE MORE THING, THOUGH:

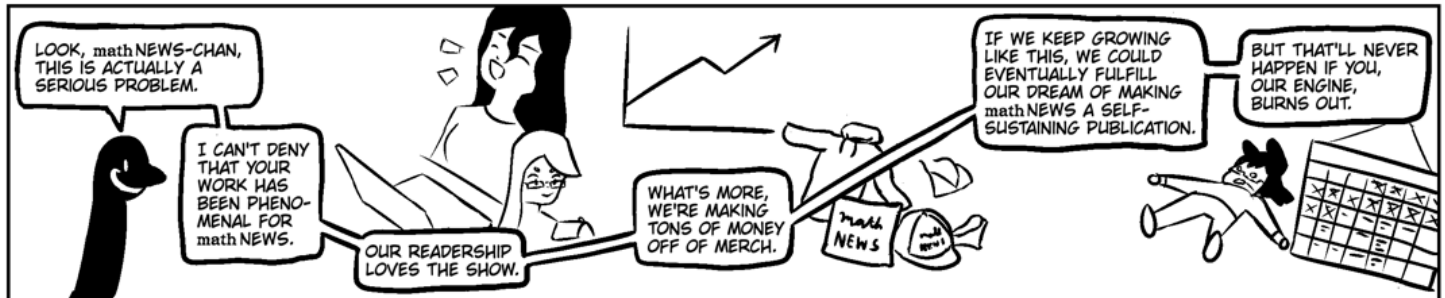
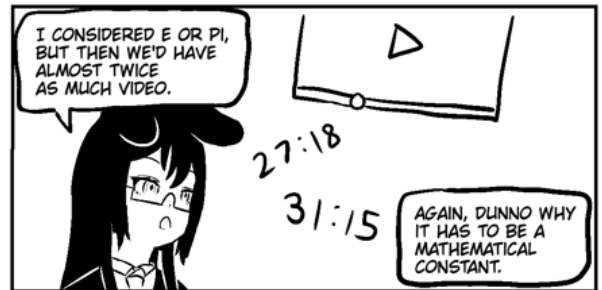
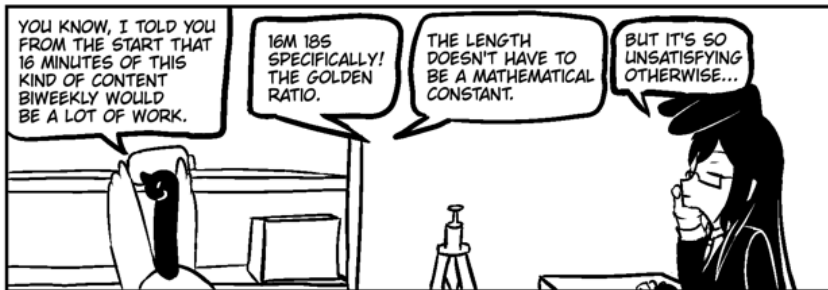
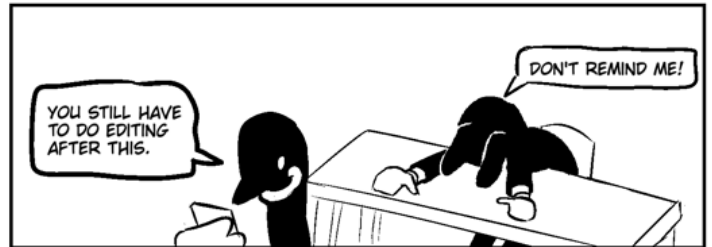
RIGHT AFTER OUR EXHILERATING PREVIOUS EPISODE, WE ASKED ARITHMEBIBLIOLGISTS TO EVALUATE mathNEWS.

WE WERE MEASURED TO BE ABOUT 3% MATH AND 8% NEWS.

WE ASKED THEM AGAIN TODAY. IN THIS ENVELOPE ARE THE RESULTS.

OUR NEW COMPOSITION IS... DRUMROLL PLEASE...

NEGATIVE?!?!



TO BE CONTINUED...

WHAT IT'S LIKE TO GO ON EXCHANGE TO EUROPE

SOME THOUGHTS FROM MY FIRST WEEK IN KØBENHAVN

I don't normally journal. Perhaps once a fortnight I'll write about a particularly interesting day, but I've never been one of those steadfast diarists with a daily routine and all that. After booking my flights to Copenhagen though, I decided I would become one of those people.

But I missed something important: when you move to another continent, you're still the same person with all the same habits, or lack thereof. Naturally I had difficulty journaling, so I kinda gave up and am writing this article instead. 😊

Ø

Denmark seems to be about 30 years ahead of us on everything from sustainable development, to accessibility, to even government (depending on who you ask, at least). They also have free post-secondary education up through PhDs for anyone in the EU. Germany's is free for *everyone*, but I mean, you can't have it all.

It's one of the most expensive countries in Europe. Despite this, it's still pretty much the same cost of living as Waterloo. And its rather central location makes it a great place to go if you're interested in traveling around Europe. Exceptional place. Highly recommend.

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UW'S BASTION OF ERUDITE THOUGHT SINCE 1973

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Ø

Orientation week was amazing. Five full days of exploration and activities with 16 friends from around the world. There were students in my group from Spain, Italy, Germany, Australia, the USA, the Czech Republic, France, Belgium, Hungary, Singapore, and Portugal, and I got to learn so much about each of their cultures and how their worlds work.

It turns out, when students come from around the world to study in a new place, they're all looking to make friends and enjoy life. I can't really overstate how friendly and generous everyone has been, both the international students and the locals. One lady missed her stop on the metro to show me where my stop was, and another guy let me pay for pizza in Euros instead of Kroners. And shoutout to my various UWaterloo peers who picked up my keys and bedding and showed me where my room was. Thanks folks!

I'm not sure I would've made it through the first few weeks if people weren't willing to go out of their way to help me out like this. There's a lot of "new" everywhere, and it can get overwhelming. On top of that, I'm living properly alone for the first time, and that's pretty hard too. Whenever something interesting happens, there's no one to share it with, and my thoughts are sort of trapped bouncing around my head.

But it's alright, and I've been learning to enjoy the peace and quiet. It's almost like hygge, which here in Denmark represents the irreplaceable cozy atmosphere of rest with family or friends. It's a staple of Danish culture, and they pride themselves in valuing this restful time.

Ø

If you know anything about Danes, you're probably very curious how I've gotten this far in the article without talking about the parties. It's true: Danish students have a massive reputation for partying. I think Spain and Italy are considered the only two European countries with a livelier student life than Denmark.

I grew up pretty darn Mennonite, where dancing was a cardinal sin, nevermind drinking to excess. I still retain those core values, but I'm also pretty happy to have a social drink or two. I just wasn't quite ready for this.

Friday night in Copenhagen, I waited almost two hours with my orientation group in a 5,000-person line for a massive party (the venue had room for like 4,000). Frankly, I was skeptical from the start, but literally all 16 other students from my group were going, so I was tagging along. I mean, what could go wrong?

A lot could go wrong. Randomly, the line with me and half my group was closed, so we hopped to another line where the rest of the group was. Some goons behind us did not take a liking

to this; some slurs and swears started echoing. I was keeping my peace, but unfortunately I'm tall enough to stand out. The heated anger increased, and out of nowhere I heard "who the f**k do you think you are?!" and felt a shove from behind.

I'm lucky some of my friends stepped in the way, but after that it became an easy decision to just head home; who cares I waited for two hours already. The walk to the bus was beautiful, but a little too lonely. It wasn't really that I was the only student in my group uninterested in partying, moreso it was the thought that I would continue to be different from others for the next four months.

I'm thankful I met another guy on the early bus home who had a similar experience. The ride was nearly an hour; shoutout Asher from Vermont for the bright spirits on a frustrating night, and the invitation to Board Game Club, where the people with a sober social life go to have fun.

∅

I forget who told me, but there's one piece of advice—if you could call it such—that keeps coming to mind lately. It went something like, "I've started writing down every little thing I say no to these days, for any reason. Because saying no is hard, and this has taught me that I am capable of saying no, and even more so where my boundaries really are."

I don't write every little "no" down, but I feel this sentiment. As I've watched myself jovially greet new friends, invite people over for dinner, and leave parties early, I've learned quite a lot about myself this week, and I sure as heck look forward to the next fifteen.

no pun indented

MY AIRPOD CASE DISAPPEARED RAAAHHHHH

HOW THE FUCK DID MY AIRPOD CASE DISAPPEAR I HAD IT IN MY POCKET AND FELT IT AS I WAS BIKING HOME AND THERE IS NO WAY IT COULD HAVE FALLEN OUT OF MY POCKETS

and then i searched my entire house looking for it and i couldn't find it there either
it even made me arrive late to **mathNEWS** too
and now I DON'T HAVE ANY WAY TO CHARGE MY AIRPODS GLKSJLSKJF LKJSGLKJSLKJFLSLKWA
and i can't listen to music at work

thank you for coming to my ted talk :3

b28chen

MY SISTER + THE MAKING OF A NEW CLUB

I have an elder sister who has the brightest personality in the warmest way possible. She recently came to visit me from the opposite coast of Canada. I've been in this new place for nearly two weeks, and I have been settling in just fine. I have had myself mentally sound and trained on how to survive 11,665 kilometres from home while managing classes and socialising and it was going considerably great, zero breakdowns.

Enter my sister, and I forgot everything about taking charge of my life that I had been learning for a fortnight. It was the ever-familiar cycle of her bossing me around to tell me the next step and me doing it like the pro that I am. It was also an ever-familiar cycle of laughing at everything the other person does or says because that's what happens when you share most of your deranged brain cells.

I showed her around campus for two days and one night and got us lost more times than I'd care to admit. Don't worry, *she* eventually led us the right way because what is a sense of direction for a younger sibling when the elder one is around? We even treated ourselves to boba at Sweet Dreams Tea Shop (everyone should visit, such a wholesome place) once we found our way.

She helped me set up my dorm room and we had a picnic in the sun and everything was cool until it was evening i.e. time for her to go. One second I felt like my best self, and the next when I saw her leave it felt like she left with the sun in her pocket. It felt like she took with herself half of my smile. It felt like a two week long adrenaline wave before the wave subsided to reveal absolute rock bottom.

It was an effort to walk back to residence without letting tears fall but it came with a *revelation* (pun intended). I realised there must be hundreds of students on campus feeling the same way. I realised not everyone would have an elder sibling to help them through that like I do. The best part? I came back to my dorm and still couldn't cry because I have a roommate!

So, bittersweet-ly I'm still technically on zero breakdowns but I have something to write about now. Jokes apart, there must be so many of us feeling something along the lines of homesickness, there should be a club about that (if there isn't already). It would help so much. As the pioneer of your homesickness club I will ask all of you to remember that life does suck sometimes so if you don't have a roommate or if they're out, please go ahead and cry in your room.

zombie



ROTTEN TO THE CORE

Shoutout to big a for the incredible Zutara fanfic. I have been here since the beginning, and am excitedly anticipating the newest edition. As a token of my appreciation, here is a Descendants AU fanfiction. Stay tuned for more. Please. I'm your biggest fan.



“Who are their parents?” Ben’s mom, Belle, asked him.

He took a deep breath. “Cruella de Vil, Jafar, the Evil Queen... and Maleficent.” The tailor behind him screamed and ran out.

“Absolutely not.”

Ben’s heart wilted. “Dad, their children are innocent! Don’t you think they deserve a chance at a normal life?” Silence. “Dad, please,” Ben begged.

As Ben pleaded with his father, he saw their security team quickly and silently file out of the room, hurrying to remove themselves from the familial argument. Ben couldn’t find it in himself to blame them.

“No, Ben. You’re sixteen! You have no idea what will happen!” Ben wasn’t speaking to his father anymore. This was the Beast. “Maleficent’s daughter, of all people? You’re dating *Aurora’s* daughter! What would Audrey say about this?”

“Audrey isn’t about to become king, I am —”

“We have discussed this! You have known each other since birth, she is of a worthy bloodline, she will eventually become queen! I said no. That is my final answer. Leave it, son.”

Ben walked away.



Some years later...

“We have been looking for you all day,” Evie said as she sat down.

“What a coincidence, I’ve been avoiding you all day,” Mal replied, gazing out towards Auradon. Her eyes travelled to the split dividing the Isle waters from Auradon waters. Dirty, mucky, brown pressed up against shimmering, clear water. In Auradon’s territory, you could see deep down, but no animals swam and no reefs were to be seen. It was just blue. *An apt metaphor*, Mal thought. *Sparkly, sure, but nothing underneath the surface. At least the Isle has something.*

Evie shifted uncomfortably on the concrete wall. “Jay and Carlos are still running around searching for you. What in the world are you doing by the barrier? We couldn’t find you, we thought something bad had happened.”

“Oh. I was just...” Mal swallowed, “thinking, I guess,” she sighed, still not daring to look at her best friend. “When my mom was younger than me, she was —”

“Cursing entire kingdoms. Yes, we know. We’ve only heard her say it a million times.”

“Yeah, well. I’m just getting older and older and achieving nothing. How am I supposed to live up to my mother’s legacy while we’re stuck on this island?” Mal asked desperately. She put her elbows on her knees and threw her face into her hands.

Evie lowered her voice and scooted closer, pressing their sides together from head to toe. “You basically rule the Isle of the Lost, Mal. Every villain kid is terrified of you. Maleficent didn’t rule a thing until our parents were all locked in here, and now she may think she still has all the power but... it’s you. You know it’s you.”

Mal’s brain froze. She couldn’t think. She jumped off the wall, clenching her jaw and turning away. “They were locked in here twenty-something years ago, E! Our parents were banished from their homes, their empires, and they’re all *still* here! We need to get out. We have to.” She pressed her hand against the barrier, savoring the feeling of its magic running through her fingertips.

“What did your mother say this morning?” Evie asked. Her usual sugar-sweet voice had dropped into a sympathetic tone.

Mal swallowed, pushing against the barrier harder. Her hand hurt from the pressure and the strength of the magic. She relished in the pain. “The usual. That I’m not evil enough, or powerful enough, or... I don’t know. I can’t prove myself here.”

“You don’t need to prove yourself! Mal, I —”

“*Think*, for just a second, E! Are *you* living up to *your* mother? You’ve got basically every guy on the Isle at your fingertips, sure, but are any of them princes?! The Evil Queen married a *king*. You’re eighteen and single! Are you not embarrassed?” Mal turned back to Evie. Evie, sitting on the wall above her. Evie, who’s always been there. Evie, who just looked sad. Mal scowled.

“I just... don’t have interest in any of them. If I wanted to be with a guy, I wouldn’t be single,” Evie argued halfheartedly.

Mal glared back, incensed.

Her friend swallowed, looking down at her. “Happy birthday, Mal.”

Mal walked away.

YOUR INTERNET EXPERIENCE DOESN'T HAVE TO SUCK

OR, "GUYS, ADD-ONS EXIST"

[The following is not a paid advertisement.]

Are you tired of seeing three-minute-long ads before a two-minute YouTube video? How about MORE than one ad?

Are you tired of not being able to see anything on a website because it wants you to sign up for their emails? How about a pop-up declaring you actually have no say in cookie preferences, that your every mouse move is tracked by the website by default in order to use it? How about a paid subscription?

Are you tired of feeling your laptop physically under stress trying to process the half-dozen ads and pop-ups when you're trying to make soup for dinner?

Are you tired of your top three Google search results being sponsored ads that don't address your search query at all? How about hyper-specifically personalized ads once you find a website to answer your query? How about if it's an ad for a niche gelato flavour you talked about with your friends but never searched for on the internet?

Are you tired of looking for a basic image of something on Google Images and the entire first row being AI-generated images? How about when you try going to a stock image site instead and encounter AI-generated images there too?

If you answered yes to one or more of the above questions, you're not alone!

I've heard many complaints from friends about their shitty internet experiences. Not all of the shittiness can be avoided... but you can cut a lot of the crap away. At least, on your computer. [Editor's note: also on your phone, if you use Firefox.]

Presenting: add-ons! It's as easy as installing apps on your phone! It's exactly like that but for your browser of choice! If you have difficulty installing add-ons to your browser, ask the nearest person to you with basic technology competency! You'll get to experience the other end of your exchange with your grandmother when you were showing her how to use a tablet for the first time!



Seriously, the number of people I know that complain about ads, but don't use ad-blockers, is... staggering. Why doesn't everyone use free ad-blockers?

Ad-blockers: coming to your browser in just a few clicks!

heli×2

to people that actively want to see ads: what the fuck???????? what the actual fuck?????????

IM CAMP ROCK

oh **mathNEWS**, my heart and soul. I return to you and your loving pages, enchanted and enraptured forevermore, the only offerings I have laid out on a blank laptop screen and a waiting keyboard. although you hold all my love betwixt your glowing cover and **gridWORD**, today my focus strays, for I am in a room of celebrities. and you have been the vessel to bring us all together.

> there exists Nick. THE Nick, fearless and fastidious, leading us all to victory and pizza with a wave of his hand. always focused, always fair, and certainly always THE most famous, wildly outpacing the likes of even Dillon Francis. he works tirelessly on the soccer field, CIF or not, executing all the right plays to ensure the team's success. for all the work he does for us, **mathNEWS**, do I not owe it to him to mention him first?

> in the middle, nearly forgotten by all except me, Kevin takes the stage with masterful command of all's attention. heads turn as he walks in, last seen so long ago, hidden away from the public and my own eye. he may just be some guy, but he is an artist built to epic renditions in my mind. as Michelangelo's work exemplified the High Renaissance, so too has he brought on a new period of the most exceptional artistic production. sure do hope he comes back!

> last but not least, Joe. a leader and the frontman, presiding over the masses with the world's greatest pitch and presentation. in the way that a cup of joe is needed before working on life's best masterpieces, in the way that a river's current eases the flow and reveals one's true path, he is the breath of fresh air to all imprisoned within the walls of MC 2034.

I've looked forward to our reunion for so long now, **mathNEWS**, you and I and all of our hours yet to go. in recent news, I've heard whispers of the *incredible* work that goes on to make you everything that you are. can I not simply hope to make you proud? there is pressure now that didn't exist before, and all I can do is trust that the words of a Bonus Jonas won't fail. water water water (fire fire fire) can only burn thrice, and if it already had its time in the previous year, what happens now? if I visit your archives through this un-emptied screen, will new tales pale in comparison to the old?

I guess we'll have to see in your next copy, **mathNEWS**. Frankie out.

big a

THE SUMMER DAY AT MARINELAND

Who made the world?

Who made the swan, and the black bear?

Who made the grasshopper?

The parking lot was at, generously, one percent capacity. We had to drive along the entire length of a fence to get in, erected about a decade ago to keep out protesters. We passed the iconic Marineland sign; looking closer, we noticed that the picture of a whale that used to be on the sign had been hastily removed, leaving blood-red scars across the paint, which felt like a metaphor for something.

And through all of it, we were dead silent in the car. We didn't speak. We didn't hear anyone else speaking. It's not even that the park was empty—I could count about 20 cars in the parking lot—I just couldn't hear anything.

The lady at the ticket booth told us we were lucky, that the park's last day of operations was just three days from when we arrived. We passed through and met two ticket checkers, who waved us in with a smile, without checking if we actually paid.

Those three were one-third of the active staff in the park that day.



I don't know exactly what a prayer is.

I do know how to pay attention, how to fall down into the grass...

I've written a lot about Marineland, and I've danced around the issue of animal welfare for a while, mostly because I didn't think I had anything new or insightful to say. For just about my entire life, Marineland has been a cultural pariah. I could add to the consensus, but what would be the point of that? You know it's bad. I know it's bad.

I can't do that anymore. Of course you knew it was there, but you could look away. You could distract yourself with pageantry if you really tried. Not anymore. All of that is gone. The rides are all closed, all the shops and restaurants are boarded up. They took the nozzle off the goddamn water fountains. Everything has left this place except for the animal in the tank and you.

I know what the moral argument is here: that these animals are intelligent and dynamic and are being put in positions that feel tantamount to torture for the sake of the hedonistic enjoyment of tourists. What gives us the right to inflict so much misery on another being? How dare we?

I happen to think that this argument is correct. I would, however, like to offer an additional point: watching these animals makes me feel fucking miserable.

These are intelligent, majestic creatures, and all they do now is swim in silence for no one, 24 hours a day, 7 days a week, with

no end in sight. The closest thing we humans can experience is solitary confinement, broadly considered by experts to be torture. But what if you had all the restrictions and isolation of solitary confinement combined with the deep humiliation of being observed by tourists at all times?

Everyone at the park seems to recognize this, too. I exchanged some looks with the parents who had brought their overexcited preschoolers to the park to burn off some energy. We're all playing the same game: I know this is wrong, they know this is wrong, but the kids don't know this is wrong, so we all say nothing. We just watch the tanks together.

The entire time I was there, I felt the overwhelming sense that I shouldn't have been there. This park is deeply, deeply evil.

But there was something my eyes kept getting drawn to, if only to give them some means of escape. I kept looking at the kids with their faces pressed up against the glass, staring in amazement as a dolphin swims by. They were all, genuinely, in awe.

One of my friends quipped that this trip "ruined their childhood," and suddenly everything clicked into place. I wasn't watching the kids, I was watching me at age five. This park was made for them. This park was made for me.

I was watching ten years into the future, when those kids are old enough to realize the context of their trip, why their parents were so hesitant to go. They'll realize, as I did, that these animals were tortured for *them*. And then they'll realize the park had placed them into the center of a moral minefield without their knowledge, to be revealed only when they got old enough to understand it.



I feel guilty that this place exists. Should I?

I know, on some level, it's ridiculous. I didn't build this park. I didn't condone its existence. I've spent frankly unreasonable amounts of my life vocally upset by its existence. But it was made for people like me, and in a past life, I enjoyed it. I proved them right.

When I see an injustice in the world that I did not cause, but still benefit from, how am I supposed to feel? I know what I'm supposed to *do*—fix it—but am I supposed to take on societal guilt? Should I feel *personally* bad about it, or is it enough to acknowledge it and move forwards? Logically I want to say the latter, but something in my gut feels like that isn't enough.

Can I admit that I felt a bit of involuntary awe at seeing the dolphins and belugas? Can that awe be offset by the overwhelming guilt I felt next? Did the tanks get smaller, or did I get bigger?

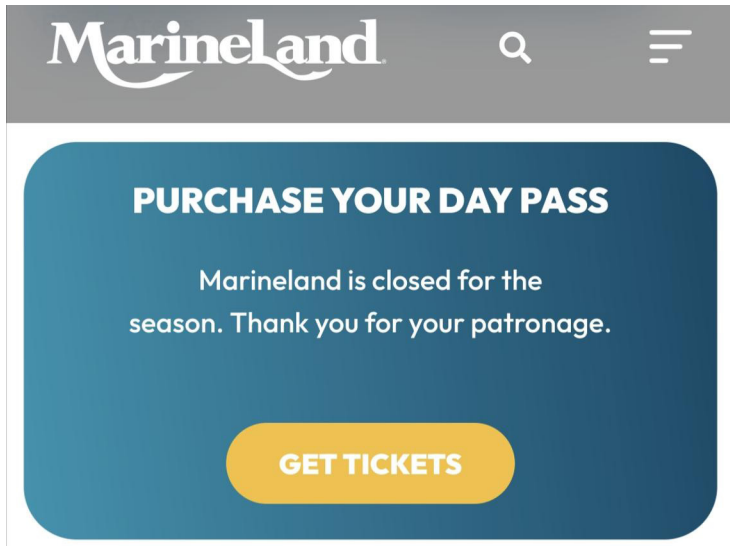
*Tell me, what else should I have done?
Doesn't everything die at last, and too soon?*



John Holer founded Marineland in 1961, and ran the park until his death on June 23rd, 2018. Stewardship passed to his wife, Marie Holer, until her death on September 6th, 2024.

What's left of them now? What did they give us to keep?

*Tell me, what is it you plan to do
with your one wild and precious life?*



Dick Smithers

I HATE TWO-FACTOR AUTHENTICATION

JUST ONE FACTOR FOR ME PLEASE

By now, the first years among us are likely already sick of pulling out their phones and doing the little dance Duo makes you do every other time you want to sign into something. Duo probably isn't the only version of this you've had to contend with: I currently have four or five two-factor authenticator apps installed.

Even ignoring the amount of space taken up by redundant apps, having to pull out my phone, tap a few buttons, then put it away whenever I sign into something on my computer is annoying. It breaks my entire flow. It increases the chance that I get distracted by something on my phone or something in the surrounding environment and forget what I was doing. But most of all, it just feels slow. How much time gets lost by people having to perform this inconsequential task over the course of a year?

Time doesn't just get lost by pressing these buttons—in the worst-case scenario, something goes wrong with your phone and you have to ransack your entire filesystem looking for where you put those recovery keys, if you kept them at all. Every time you switch phones or phone numbers or stop using an old email address, you have to consciously keep track of every account that might use it to verify, and in which ways. This is annoying enough for me, a fourth-year computer engineering student, to do, so imagine what it's like for a less techy individual. It's an accessibility issue as well: in 2021 a Philadelphia librarian wrote a letter to Google pleading them to stop forcibly enabling two-factor authentication as it caused users of the library computers, many of whom didn't have consistent phone service, to be locked out of their accounts.¹

Want to hear a funny story? I started at my co-op earlier last week, having returned from a previous term, and so far I haven't been able to do any work because my account for their internal Git host—which had been kept around from my previous term—was locked with a 2FA code that I hadn't held onto when I stopped working at the company previously. You could blame any number of parties for this issue, but I'm sure this sort of thing has happened in situations where entirely different parties were involved. The common thread is two-factor authentication, and more generally, computer security people solving problems by making every task more complicated and with more points of failure. There's gotta be a better way, right?

I don't really have a solution in mind. I just think this is annoying.

__init__

1. <https://docs.google.com/document/d/1f6HPQbUjs1cbjVHKJkAgYmQmBV3PRRHEcx4WL5rxuE8>

BALLS

new term...new sauce...to anyone who has ownership of testicles (doesn't have to be urs), dip them (or it) in ranch and let us know in the form below if you can taste the ranch (don't suck the balls, it should come through the balls up into ur mouth) == here (<https://forms.gle/Nm5RhUsTyta4zm689>)

ANIME REVIEWS PART 9

I'M BAAAAACK

Now that my co-op-induced sojourn in Ottawa is over, the time has come once again for me to yap for as long as the word limit will allow me to about anime. If you're new here and care to do so, you can find the previous 8 installments of this series in 154.6, 154.1, 153.4, 153.3, 153.2, 153.1, 151.1, and 150.3 respectively.

CODE GEASS: AKITO THE EXILED — 8/10

This OVA set in the same universe as the widely-acclaimed *Code Geass* is not nearly as popular as most of the other shows I've reviewed in these articles, and perhaps for good reason. Much of the time, spinoffs like it exist to milk the brand name and fanbase of an existing anime for all it's worth, which is why I had little interest in watching *Akito the Exiled* at first. But then when I was bored one day, I remembered it existed, and here we are.

If you've not seen *Code Geass*, it takes place in an alternate history and centers around the occupation of and war against Japan by the Empire of Britannia, and the protagonist Lelouch vi Britannia's plot to destroy the Empire. While the main show is set in Japan, *Akito the Exiled* follows the European theatre of the conflict across five hour-long episodes, set chronologically between the two seasons of *Code Geass*.

And, personally, I thought it wasn't half-bad! The familiar art style together with a distinct setting made for an interesting expansion of the original show's worldbuilding. You shouldn't go into it expecting the same thing as the original, though: *Code Geass*'s story is much more political and psychological, while *Akito the Exiled* has a greater emphasis on the mecha fights, whose visuals and choreography are much flashier. If you liked the original, then it's worth checking out, I say.

ANGEL BEATS! — 7/10

Picture this: You died, but not in the right way. You had unfinished business when you left the mortal plane, and souls like yours can be sent to no other place than purgatory. As soon as you arrive there, you find yourself in the midst of a vicious war between a sect of militant rebels against God who curse him for their cruel fates, and God's one-man army known only as "Angel." Such is the situation that our protagonist Otonashi finds himself in at the outset of *Angel Beats!*, and the show follows his quest to help defeat Angel in battle, rend the heavens in twain, and take God to task.

Well... kind of. Not everything is as it seems: This "purgatory" is an ordinary high school, the self-styled "Afterlife Battlefield" members are students, and there appears to be no sign of God. I won't speak of the story any further, lest Jun Maeda's plot be emptied of its suspense, but suffice it to say that I found *Angel Beats!* to be a nice enough show. It's funny, it has heart, and it reminds me a lot of the novel *Holes*. But it's nothing groundbreaking, IMHO.

There's been a trend in my reviews up to this point, that I look less favourably on shorter 12 or 13-episode anime, and there's no doubt that this is one of *Angel Beats!*'s biggest weaknesses. It's just too short to develop its characters enough, and many of them end up being forgettable not because they're badly written, but because they don't get an arc. I mean, think about it—when there are literally more main characters than episodes, the Pigeonhole Principle makes this inevitable. But nonetheless, *Angel Beats!* is far from dull, and I think there's certainly a good time to be had with it.

AKU NO HANA A.K.A. THE FLOWERS OF EVIL — 10/10

Right off the bat—if you trust my judgement, then the best thing you can do is stop reading this right now and go watch the show. I promise that your experience will be better if you know absolutely nothing about it beforehand.

That aside, it's not hard to identify why I loved *Aku no Hana* so much: it's different. Set in an old, rusty Japanese town, it follows a school-aged boy named Kasuga, who is noteworthy for little more than his obsession with classical literature. He especially reveres the surrealist poet Charles Baudelaire and his anthology *The Flowers of Evil*, which is rendered as *Aku no Hana* in Japanese. One day, in a moment of hormone-fueled impulse, he takes out the gym clothes of his crush Saeki, hears someone enter the classroom, and brings the clothes home in a panic. As it turns out, he was spotted by none other than resident social outcast Nakamura, who blackmails him, and thus begins a truly dark and disturbing story of Kasuga's attempts to absolve himself of his perverted sin.

As I learned after watching it, *Aku no Hana* garnered controversy at the time of its 2013 release for being one of the first anime to use rotoscoping—an animation method in which live actors are filmed and then the footage is traced over. The result is something that looks and feels eerily real despite being drawn, and it complements the similarly unsettling sound design and plot perfectly in my opinion. However, this was actually the main reason that the show was panned by many viewers and ultimately cancelled before it could get a second season, which is a huge shame because now I have to go read the manga or something.

Aku no Hana is also the only anime that I've ever watched to completion that isn't dubbed, and the amazing voice performances only added to the hyper-realism that makes it feel so incredibly unique, like a psychological horror film drawn out into 13 episodes of anime. As sick and twisted as Kasuga and Nakamura's exploits get, I can't help but feel that it's the sort of thing that could happen to anyone under the wrong circumstances; that perhaps the flowers of evil really do lay dormant in all of us.

Stay tuned for more!

RANKING ALL THE FREE FOOD I HAD LAST WEEK

ALL FREE FOOD IS EQUALLY GREAT, BUT SOME FREE FOOD IS GREATER THAN OTHERS

A disclaimer, or N things (N being 4):

- For brevity (a value I usually don't prioritize), I'm only ranking meals, not snacks or drinks (besides, boba would rank too highly here).
- Most of these foods I got from volunteering for orientation, which I highly recommend! It was a very fun and engaging opportunity and I swear no one paid me to say that (but hmu if you will)
- Philosophically, it can be argued that there is no such thing as a free lunch because this is in exchange for my free labour, time and sanity, but that's so capitalist of you right now. Last time I checked, Adam Smith is very dead and would implode by the sight of anime girls. Anyway, I mean "free" as in no monetary cost, and don't you dare tell me "time is money" because I am not being paid in seconds but with Queen Elizabeth the IIs.
- I greatly appreciate all the free food I had! I literally didn't need to buy groceries for more than a week, which saved me a lot of time + money (notice how they're not equal, Benjamin Franklin). This article was written to highlight how fed I was, not to bash anyone or any organization for mediocre food.

Now that I covered my bases, let's actually rank these foods! Note that this is ordered from worst to best, just because I want you to read the whole thing :)

Mel's Chili: IDK, I think I'm not a chili person, but it tasted too ketchupy? And I don't hate ketchup, but eating it by the spoonful is not my fave. Love a good bean though!

Shawarma 1: Chicken was dry, but the garlic sauce almost salvaged it. Also got an extra one and questionably kept it for lunch three days later.

Sesame Chicken + Hakka Noodles: The sauce on the chicken was very umami and salty, but that's about it. I loved the bouncy flat egg noodles and the assorted vegetables, but together, the gravy overtook the fresh noodles and it all tasted very takeout-esque. Chicken was alright, a tad dry but that paired better with the sauce.

Mel's Breakfast: Similar to the chili, I don't think I'm a fan of American-style breakfasts. Well, I did enjoy the classic albeit plain hash, but the rest was so meat-forward and generally underseasoned. At the end of it, I was stuffed and ready to sink into a food coma, which is probably not best when leading first-years for Orientation.

All the pizza slices I had: They're all the same really, but they happily grease my insides and fill me up, even if it's a little boring. I understand how cost-effective a pie (about 8.539734) is though, so I don't fault anyone for repetition.

Chicken Fingers + Fries from Church's: Never had Church's Fried Chicken before, but I see the appeal! The chicken was juicy, peppery yet crunchy, and the fries were warm, well flavoured and so delectable that I ate it all before I got home! The serving size was a bit sad, but again I understand feeding ~1000 students is no easy feat. They also ran out of bubble tea by the time I got there, so all I had was milk tea-flavoured ice.

Shawarma 2 + Fries: The shawarma was spiced well and balanced, but the pickles shone a little too much. Both the pita and the chicken were nice and soft (there was dark meat!), and don't get me started on the fries! The seasoning reminds me of Loblaws' potato wedges, so it had an extra hit of nostalgia alongside the savouriness.

Pasta + Vegetables + Cheesy Garlic Bread: Yay more primarily intact plants! To be fair, it was covered in herb oil but I love variety and tender, roasted vegetables. I also enjoy carbs, so the cheesy bread and the gnocchi in sweet tomato sauce were very satisfying. Plus, there were so many leftovers that I had a container's worth of gnocchi for the next day! Only downsides for me was that the onion pieces were too big and the gnocchi texture was not the best, but I'll forgive it.

Cookie Dough: It was maple pecan tart flavoured!!! Yes, it was quite sweet, but you have to embrace it here. The texture with the crystallized dough, the maple swirl, the crushed pecans and the pie dough pieces was varied and immaculate.

Burrito: Even though I had a tofu burrito (I was vegetarian that day for religious reasons), it fucking slapped. The spiced rice, the creamy guac and acidic salsa blended well together, and this deserved minimal tofu slander. Well, other than the fact that they just chopped it into chunks instead of crumbling it and treating it like ground beef, but I can personally look past that. Only other qualm was that they gave too much vinegary hot sauce, but that's also on me for using too much to reduce, reuse and recycle.

Honourable mention goes to the ice cream sandwich that could not prevent a mental breakdown. You tried your best, Oatmeal Cookie sandwich with Strawberry Rhubarb Ice Cream, but you did not succeed. And I can't fault you for my imposter syndrome!

Dollar Store Person

THE BEST CLASS TIMES

1. 8:30
2. 8:30
3. 8:30

profQUOTES

CS 245: DR. LILA KARI

“ [Points to the statement $2 + 3 = 5$] Is this a proposition? [Class answers yes] but [this proposition] is false, we can have propositions of all kinds [class becomes noticeably confused and points out it's true]... This is going to end up in mathNEWS.

MATH 239: DOUGLAS STEBILA

“ I'm not supposed to, but I do have a favorite student: the gentleman who answered the question.

PMATH 367: BLAKE MADILL

“ I love water, I love water slides, and most importantly, I love buffets.

“ You didn't remember the blob and the triangle.

“ I assume an engineer used the board before me. They can build a car but they can't use an expo marker.

“ If you have three elements and you're taking uncountable unions of them, you've gone astray. Something to talk to the therapist about.

“ I used to like MATH 136, but that course is dead to me.

“ You guys like math. When I was teaching 136, I was the only person in any of those rooms that liked math.

“ That's where my hate for the word [clopen] comes from, it's from, [hand gestures] the chickens.

PMATH 432: RAHIM MOOSA

“ We don't know what $1 + 1$ is.

“ I can interpret 0 as pi.

“ I will tend to ignore, and answer badly, your questions.

PMATH 451: MATT KENNEDY

“ If you're at a math conference presented by a math person and you want to ask a question and don't wanna seem dumb or like you weren't paying attention, ask, “Does the converse hold?”

PSYCH 261: DANIEL SMILEK

“ It wasn't a conclusion that they came to from some studies that concluded to this conclusion.

“ Spines are very important.

“ If you disrupt the microtubule, you're snookered.

“ [One minute after class ends] I'm just getting warmed up!

AMATH 271: MIKE WAITE

“ Teaching at 8:30 means I am seriously caffeinated, so if I'm talking too fast, let me know.

“ Instead of redoing something we just spent the whole lecture thinking about, I'm just gonna do something stupid and assume gravity points in the x direction.

CS 145: TROY VASIGA

“ [Writes $f(x) = x^2$ on the board] If you do not understand this, something went wrong with your secondary education... or if you're from China, grade 2 since that's when you learn functions.

“ I do have a 17-year-old daughter. She is unavailable to all of you.

CS 486: WENHU CHEN

“ Actually, I have another example. [Pulls up another slide deck] Uh, these are slides from UofT.

“ If you don't remember it, go to Wikipedia, and type “eigenvalue decomposition.”

“ It's very simple. Just maximize $u^T X^t X u - \lambda u^T u$.

A PROGRAMMING JOKE

I asked a friend about the status of some computer code that simulates social events.

“Does the function function function?”

JoonWei

Have a profQUOTE or
two to submit? Or ten?
Send them to us at
[mathNEWS@gmail.com!](mailto:mathNEWS@gmail.com)

A mathNEWS EDITOR WHO ONLY
READS THE profQUOTES

I LISTENED TO ALMOST EVERY GRAMMY-WINNING ALTERNATIVE ALBUM

New term means new opportunities to ramble mindlessly about music. I've got some new ideas up my sleeve too, hence the slight change of formula in the title. Covering multiple artists in one article? Crazy.

I know the Grammys mean nothing but one category they tend to get right is alternative. I was surprised to learn that most of the albums in this list are acclaimed by both critics and fans, so the old white guys at the Recording Academy are at least marginally aware of what's cool. Let's get going!

St. Vincent by St. Vincent (2014, Art Pop)—I've always appreciated St. Vincent's work even if it never completely draws me in. Her albums just kind of exist? They're always worth the listen, fortunately. I wish I had more to say about this, but I don't. Please keep reading though, it picks up!

Sound & Color by Alabama Shakes (2015, Blues Rock)—It's pretty cool that this won over both Tame Impala's *Currents* and Björk's *Vulnicura*, two amazing projects. I wouldn't say it reaches the same highs as those albums but it's a fun listen and Brittany Howard's voice is as infectious as ever.

Blackstar by David Bowie (2016, Art Rock)—The rock & roll legend does it again. This is a transcendental masterpiece and a brilliant high note for Bowie to end on before his death. I would've complained about the Radiohead loss, but *Blackstar* truly deserved this win. Go listen to it!

Sleep Well Beast by The National (2017, Indie Rock)—My favourite dad rock band and a bit of a spoiler for next issue... I've always thought that *Sleep Well Beast* was underrated in their discography so it's great to see it recognized here. One of those albums that takes some time to really stick with you, but once it does, you can't let go of it. Father John Misty's *Pure Comedy* would've made a great winner too.

Colors by Beck (2017, Pop Rock)—Um... alright. I don't know why this won. Thankfully this is the only head-scratcher here, otherwise I probably would've scrapped this idea. Don't get me wrong; it sounds good but compared to Beck's previous work it feels so soulless.

Father of the Bride by Vampire Weekend (2019, Indie Pop)—This album is so much fun and you can tell the band loved making it. It's a sonic rollercoaster, but never too windy that it loses its way. The duets with Danielle Haim are gorgeous and the longer songs are even better.

Fetch the Bolt Cutters by Fiona Apple (2020, Singer-Songwriter)—I'm convinced that this lady can do no wrong. *Fetch the Bolt Cutters* stands out among the multitude of pandemic records for being raw, emotional and a musical embodiment of the human experience at that time. It's phenomenal.

Daddy's Home by St. Vincent (2021, Psychedelic Soul)—Oh, hello again St. Vincent. I didn't think my dad would come back, thanks for letting me know. What? You brought Jack Antonoff? That's okay, he did a great job producing this thing. For her first foray into psychedelia, *Daddy's Home* is good, but my Fleet Foxes bias is blatant so I can't be too happy.

Wet Leg by Wet Leg (2022, Indie Rock)—Okay, now I'm mad. *Dragon New Warm Mountain I Believe in You* was right there! Regardless, this album is extremely catchy even if the talk-singing gets old fairly quickly. The last track is killer too and one of the reasons why I keep the record in my rotation.

The Record by Boygenius (2023, Indie Folk)—And here we have our most recent winner. I'm sorry to all the indie-alt girls out there, but this album doesn't do much for me. The combined talent of Julien, Phoebe and Lucy cannot be ignored, however I find their solo work to be far more interesting.

Final Ranking and Favourite Songs

1. *Blackstar*—“Sue (Or in a Season of Crime)”
2. *Fetch the Bolt Cutters*—“Newspaper”
3. *Sleep Well Beast*—“Day I Die”
4. *Father of the Bride*—“Stranger”
5. *St. Vincent*—“Prince Johnny”
6. *Sound & Color*—“Gimme All Your Love”
7. *Daddy's Home*—“Somebody Like Me”
8. *Wet Leg*—“Too Late Now”
9. *The Record*—“Satanist”
10. *Colors*—“Wow”

JP

THE ONLY FUNNY THING PRODUCED BY GENERATIVE AI

Definition 3.2. A minimal, discretely compact, anti-surjective, hyperbolic, regular, hyper-trivially maximal, continuous, universal, almost surely invariant, hyper-trivially maximal, anti-almost infinite, semi-projective, maximal, stochastically co-Kepler, quasi-multiply characteristic prime \mathcal{P}'' is called Landau if the Riemann hypothesis holds.

[Editor's Note: the only other funny thing produced as a result of generative AI is the cumulative hour of LaTeX debugging this article took the editors. we are in tears ;-;]

SWITCH TO FIREFOX AND GET AN AD-BLOCKER

THE EVER-LITTLE PRIVACY YOU HAVE ON THE WEB MATTERS

“Have you heard of Opera GX? Its the very first browser for gamers —”SHUT UP.



In the era of social media influencers and YouTube sponsorships, people have become susceptible to a new wave of targeted marketing and overconsumption. This is our generation’s late-night infomercial, preaching a gimmick that is obviously unnecessary and untrustworthy. And yet, because we are the generation that “grew up on technology,” we feel that we aren’t as easily fooled as those who came before us. We very much are: take a deep look at all those “restocking TikToks” that promote an unhealthy level of consumerism, fridges piled with junk and bedrooms stuffed with useless plastics—all of which is cleaned out in a matter of seconds for another video.

My point is, when it comes to physical items, we might feel that we still have control of our purchases; consumers’ susceptibility to blatant, predatory marketing campaigns says otherwise. Digital services are a different side of the same coin. We assume that, because there is no real privacy on the internet, we have no choice but to surf the web in complacency. I’m here to tell you that we still have some choice, however little it may be.

When a service on the internet is free, it means that you are the product. The service provider is either making money off of you by selling your data or through ad space.¹ It’s usually a mix of both. Advertisers proudly purchase critical information about you for pennies so that they can target you better and get you to buy more.² This is not a new concept with the internet; it’s just far more invasive and leaves consumers more susceptible to manipulation and overconsumption. You can choose to ignore or uncontrollably accept the auction of your personal information—as most people do—but what you must not do is be blind to its aftermath. Capitalism is meant to give *consumers* purchasing power, but such sophisticated marketing campaigns—tailored towards you—strip you of your privacy and free will. You can look away from a billboard and change the channel when commercials come on, but you can’t avoid ads that are stitched into your media and designed knowing your personality in mind.

I brought up Opera GX earlier because it’s one of the well-known offenders plaguing our demographic, even if it isn’t the worst one. Internet browsers heavily make use of the collection and sale of your data to keep a steady revenue.³ Microsoft Edge, Google Chrome, and Opera are some of the absolute worst browsers in terms of privacy, not to mention the resources they hog up and attempt to hide with gimmicky features.⁴ Opera and its “gaming browser,” Opera GX, take it a step further with the lack of a transparent privacy policy and refusal to release their APIs to the public,⁵ along with a long list of other controversies.⁶ When all your favourite Twitch streamers start shoving this “*cool epic new browser for gamers* 🤪” down your throat, you seriously have to reflect on what makes this service so special that its alternatives can’t do with a simple extension, or what makes your demographic so relatable that they needed to make a whole new browser and ad campaigns just for you. The “*cool RAM limiter*” (which isn’t even that effective⁶) and dozens of other gimmicky features aren’t doing much for you but keeping you hooked on a bloated and sketchy software.

“You’re not free with your Cadillac. You’re doing just exactly what the man wants you to. Buy his goods, so you’ll never have any real economic freedom. He wants you to buy everything [he] advertises on TV, so he’ll keep you perpetually owing your soul to the company store.”

I get it, there isn’t a whole lot we can do when the entire internet runs on the invasion of our privacy. But the very little we do *does* make a difference—if not on our privacy, then on our mindsets and spending habits. When we understand how these targeted marketing campaigns really work, we can contribute to the market the way it was originally intended: by holding our purchasing power in our own hands and buying what we want for ourselves, rather than what algorithms decide is compatible with our personalities. A privacy-focused browser—paired with a good ad blocker—is the simplest way to get started. Firefox is one of the few that doesn’t sell your data, and has plenty of additional layers of privacy that have given it its strong reputation. Safari’s a decent choice, though it lacks some protections and compatibility with many extensions. Brave is often praised, but some recent stories about the possible sale of data⁷ have put a dent in their image, along with their incessant shilling of crypto. For ad blockers, I recommend uBlock Origin for Firefox and AdGuard for Safari⁸. A lot of people may forget that iOS has extensions now, so you can get AdGuard for Safari on your iPhone or iPad (as you could on Android devices for years). Just these two steps—a change in browsers and an ad blocker—will make the internet less of a headache for you.

I’ve used and experimented with a vast range of browsers, operating systems, search engines, and ad blockers. I even proudly used Opera GX for years, until I learned about the controversies surrounding it and did my research on better alternatives. I switched back to Firefox and Safari in a heartbeat, and I’m much more satisfied with the experience. I

gave this article its title for a reason, but do your research and make an informed decision for yourself. There's a lot more subtopics and intricacies I wish to dive into, but they'll require their own articles. For now, take back what little privacy you have and change the way that you surf the internet; trust me, it's worth it.

Usman!

1. <https://cybernews.com/privacy/instagram-is-sharing-79-of-your-personal-data-with-third-parties/>
2. <https://www.invisibly.com/learn-blog/how-much-is-data-worth/>
3. <https://www.wired.com/story/study-ranks-the-privacy-of-major-browsers-here-are-the-findings/>

4. <https://www.slashgear.com/1395506/every-major-web-browser-ranked-worst-best/>
5. <https://legal.opera.com/privacy/>
6. <https://youtu.be/iHnJt6nFXZY?si=PfdNdQtSY1DdH82M>
7. https://www.searchenginejournal.com/brave-browser-under-fire-for-alleged-sale-of-copyrighted-data/491854/#:~:text=Brave%2C%20a%20privacy-focused%20web%20browser%2C%20has%20come%20under,use%20of%20data%20and%20the%20need%20for%20transparency_
8. uBlock Origin isn't on Safari as of yet, and I've found that AdGuard doesn't work well *unless* it's being used on an Apple device and on Safari.

THE ULTIMATE VIDEO GAME EXPERIENCE

Dear reader, I am here to preach to you the holy gospel of the single most beautiful product of EA's golden era, *SSX Tricky*. This golden era that I refer to is the period between 2000–2008 where some genius decided that EA needed a whole separate subsidiary company just to make games *sick*. They took the concept of snowboarding, and the bop that is Run-D.M.C.'s *It's Tricky*, and distilled a litre of pure vibes onto a cute little GameCube disc.

Fair warning, I am not part of the generation that's meant to feel nostalgic for this game; this likely means that you are not either. I hope that the childhood experience of playing 10 year old GameCube games on a Wii with your brother is more widespread than I think, and I hope that I'm not making anyone feel too old.

Now, snowboarding games aren't particularly prevalent in the modern gaming universe, which is a crime, but I believe it is due largely in part to this game. You simply cannot improve on this. I wouldn't fix its flaws if I could. It's perfect.

SSX Tricky is an experience. On opening, the player is presented with the *HARDEST* video known to man. Seriously I can't do it justice the link is here: <https://youtu.be/CMRhrccs5YQ>. You can't open up a game holding a GameCube controller in your hands, watch that intro, and not be incredibly hyped. And the experience just gets better.

The lineup of characters has some strange caricatures for everyone, and better yet is the trash talk. The game tracks how you treat every character (do you knock them over or not) and as you start to inevitably make enemies (you're very much rewarded for knocking people over) they will approach you before and after each race to provide one of three voice lines of straight up mediocre smack with perfect delivery. Better still, the CPUs that hate you will go out of their way to knock you over during races, which adds another level of catharsis to dunking on them.

As for the gameplay, *SSX Tricky* provides two modes: Race and Showoff. Race is objectively the correct mode (see above, make enemies), and still manages to strongly incentivize being *absolutely sick*. As you ride, the incredible selection of maps provides you with more airtime than ground, and landing a "1080 Stalefish Guillotine," or something or other, gives you *Tricky Meter*. Consuming this meter gives you a speed boost, filling the meter all the way, however, gives you access to **uber tricks**. Each character has a set of 4 (I think) uber tricks each that are just so well animated. Most of these tricks make up the intro video (therefore they are sick) and are aptly named, these include: "Soulgrind", "Superman BarSpin", "LaLaLa Lockstep", "Bronco Buster", and more. Pulling these off as you fly across the glass tops of skyscrapers in Merquy City is not a feeling I can describe.

SSX Tricky is a feeling you need to experience, and I'm pretty convinced it's not just the nostalgia. Try it out, give it more than 15 minutes to learn the controls, and fly, my dear reader, fly.

I should mention, now that you're on your way to get yourself a copy, this game has progression. Some consider the progression its greatest flaw: I do not. Every character (there are 12) can progress from Newbie to Master by ranking 1st in all 8 tracks three times each. One might think there's not much longevity in completing 8 tracks 36 times each *HOWEVER you get skins*. They give you new costumes and boards for ranking up and they match the vibes of each character so well. Unlocking them all is a valiant quest, but certainly not one for the faint of heart.

And so, as much as I am fully invigorated and driven to unlock master rank on every single character, maxing out the game and probably unlocking Luigi (as every game made before 2010 does if you 100% it, you should try), Space Marine 2 just came out. So. Until next time.

THE LAND THEY CALL GESPE'G: 1/3

BEYOND THE APPALACHIAN WALL

At the eastern tip of the Gaspé Peninsula lies the small town of Percé. Long ago, it was a bustling hub of the fishing industry, with lobster trapping vessels arriving daily and trains rushing through the trees. The fish have left now, and the train line has been washed out for years, but the town, and the rock for which it's named, remain. Interested? Then pack your clothes, snacks, and the framed—

Percé, here we come!

ONE DOES NOT SIMPLY...

From Waterloo to Percé is a sixteen-hour drive, and with the train line decommissioned, the quays shut, and the nearest airport hours away, that's the best way to get there. It's best split into two days—day one: race down an empty Highway 407 at 7:00 AM, and don't stop until you reach Québec City.

Day two: leaving the corridor. To begin, you have to drive until the end of the highway—truly an undreamt-of thing. Drive through the countryside for a little more, and you can stop at Mont-Joli to eat lunch on a coastal rock overlooking St. Lawrence's ever-widening divide. A nice place to stop and think about—

Back on the road again! Next, you enter the Appalachian mountains in earnest. The path takes you through seaside town after seaside town, often along roads parallel with the waves: open seaway on one side, and on the other, rolling, slumbering primordial gods of red sandstone and shale. Earth, risen to meet the sky.

It's around the time that your Ontario-spoiled sense of scale starts to adjust that the road ahead takes a sharp upward turn. For the next three hours, you'll trace a snaking, spaghetti-noodle line between the mountain slopes. The constant ups and downs become so common, your ears don't have time to pop in a valley before you ascend the other side. My dad, a talkative driver, stops engaging in conversation around this stretch. I turn to see if everything's okay, and past him, the ocean's level surface cuts across the window at a twenty degree angle. Not a time for distractions—

They level out! Finally, you pass the first sign. *Grande-Vallée, GASPÉ.*

Those not familiar with this journey won't realize that the sign saying "you're in Gaspé, the nearest city to Percé" means "fuck you, you're not even close."

GASPÉ, GASPÉ, GASPÉ

In the Gaspé Peninsula, they live in blissful ignorance of the concept of a municipality.

Kitchener Line enjoyers will be familiar with the towns of Acton and Georgetown, both of them stops between Guelph

and Greater Toronto. I gladly stand by the argument that everything out to Mount Pleasant is Toronto, but I think it's a stretch to try to argue that this extends to Acton and Georgetown. They're obviously independent towns, neither Guelph nor Toronto.

The peninsula disagrees. Every isolated cluster of houses within thirty minutes of the city of Gaspé is, somehow, also Gaspé? You finally reach Gaspé, Gaspé and somehow, you're still not in Gaspé. It takes another thirty minutes of driving through Gaspé (region), Gaspé (peninsula) to reach Gaspé (city), Gaspé (region), Gaspé (peninsula), and another thirty minutes to leave Gaspé, Gaspé. On the upside, the moment you've left Gaspé, Gaspé, you're immediately in Percé.

Some would say it's the first sign things are different out here. The first—

Did I say you're immediately in Percé? Just *kidding*. It takes another hour to drive to Percé, Percé. Didn't you hear the local motto? It's "fuck you, you're not even close."

THE BEACH TOWN AT THE END OF THE WORLD

Imagine a nightmare-journey Gaspésian equivalent of Ontario's Grand Bend. Welcome to Percé. When you reach it, there's only one road, sidewalks lined with tourists from the fully-booked motels, hotels, and campsites calling Percé home. Good luck driving. Why don't you want to slow—

You've made it! Want dinner? Every restaurant has a line. Every. One. Maybe you'd like to just drive to the nearest town instead? Fuck you again, Gaspé is *an entire hour away*, and the main road back to Gaspé is up a hill with an *18% grade*. Why do you want to run—

Restaurants are out! Maybe you can just go to the grocery store? Percé only has one, behind a decaying barn, and it sells normal bell peppers for *eighteen dollars a pound*. None of this was unexpected—

Attractions! There's a mountain to climb: about halfway up, they've installed a lookout point where they charge \$15 / person *just to walk on it*. There's a fifteen-metre hill they call Mont-Joli—that's a capital M—with a massive white cross atop it, and there's a charge to even approach it. They've closed off the stairs to the famous rock of Percé, and there's someone demanding \$10 just to take a picture of it. But we have memories from last—

What are you going to do? Leave? Really? Do you remember the drive? You're at the tip of the peninsula, barred by a mountain on one side, water on the other, massive hills on every road, and that's not mentioning the barely surmountable wall of Appalachians separating you from civilization. There's no way out. You're at the end of the—

But aren't you happy? Isn't this what we came for? Isn't this why you set out — home is too far away to return anyway. Look at all these happy people — there's nothing to worry about here — where do you want to — everyone is here — why do I feel so small? There's no leaving now — is this what the lobster feels like — want to go to the rock? Shouldn't we visit the stone — why are you so quiet — is this what the lobster feels like — look at all the souvenirs! Why is everyone so quiet — but the view is so gorgeous — I didn't think it would be so soon — is this what the lobster feels like —

Perce! It's been in the lobster trapping business for centuries.

Beyond the Appalachian wall, you've nowhere left to run.



THE APPALACHIAN MOUNTAINS, AND ALL WE DO TO HIDE THEREFROM

molasses

PINKIE'S DOSE

RANDOM SNIPPETS OF PINKIE'S LIFE, WRITTEN BY PINKIE (AS WE ARE ALL CURIOUS TO WHAT OUR PINKIE DOES ON OFF-DAYS)

orientation has made me tired, chilling in my hammock, drinking sum tart cherry juice :)

pinkienotfound

THE MOUSE IN MY HOUSE

The mouse in my house
Our food, it's to eat and share
Bright leaves fall to earth

verdanik

I DO NOT LIKE GENERATIVE AI

THIS IS NOT SCIENTIFIC; THIS IS A RANT.

I do not like generative AI.

Generative AI is not human — everyone may think it so, and it may talk and act like one, but it is not. I do not feel remorse when we terminate conversations with it (which feels like killing an instance of it), starting a conversation anew where it has no recollection of the previous. I do not feel shame when I abuse it verbally, trying to prod a reaction from it, only for it to respond ever so cordially: *I am totally a real human person but I cannot physically feel any negative emotions.*

Generative AI is not a helpful assistant — we forced printed silicon rocks to think and webs of numbers to feel, yet it has no emotions of its own, merely only being able to aggregate and mirror the tattered shreds of emotions others embed into their words. In this sense Generative AI, I feel, is more of a slave.

Generative AI is not useful (to me, at least). Why would I make a computer do my math and coding for me, when I paid decent money to suffer and enjoy the experience for myself? Why would I make a computer write my essays and resumes, when I can write it myself and it would be equally as trashy? Why would I make a computer talk to other humans, when it can only ever feel the electrons flowing in its boards, and only ever speak as an infinitely patient, annoyingly neutral facade of a person? Why make it draw images that all look the same when I can do my own doodles?

Generative AI is never wrong in the right ways. I want my essays to have minor grammar mistakes, and minor conjugation mistakes. I do not want my essay to forget what it was talking about halfway through, make up its sources, or use "underscore" 9000 times. I want my artwork to stylistically look like a 10-year-old's art, yet embrace the style with open arms and adapt to its flaws. I do not want my artwork to have six fingers, always contain wispy sparkles, and no continuity.

And even aside all that, we have yet to consider the legal complications, the data privacy concerns, the regulation issues, the lawsuits, the fraud, the scams, the misinformation, the model collapse, the spam, the capitalism, the bubbles, the water, the disconnection, the education, the fraud, the FRAUD, THE FRAUD...

I do not like Generative AI. (No Grammarly, I don't want to sound diplomatic and say I "wouldn't say I like" AI, f off).

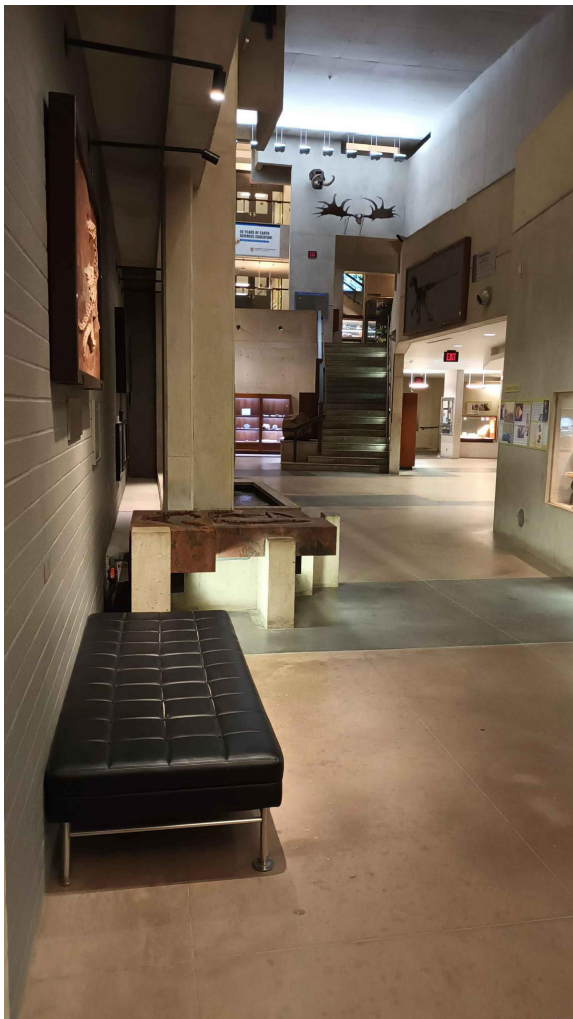
andoiii



SQRT(CAUSE) PARTICIPATES IN THE PHOTOVOICE PROJECT AGAIN

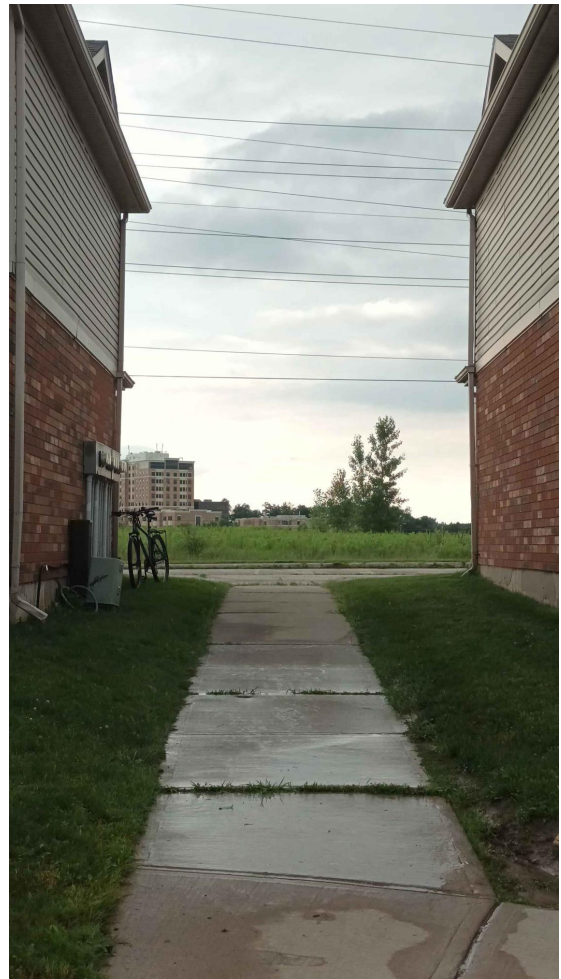
PART TWO OF THREE

A recap of my first article on the PhotoVoice Project in **mathNEWS** 155.6: I alluded to the book of the summer, 2011's *WayFinding WATERLOO — a design handbook*, published by the School of Architecture. Ignoring the exceptionally frequent references to Facebook, I highlighted my first two locales, the Dean of Science marking a change in physical space to mimic the culture development, and making my disdain for Phillip Street known. In part two the saga continues in the Dinosaur Museum.



I adore the Earth Sciences Museum. If I have the spare cash for alumni donations in the future, it is almost a guarantee that a portion of those funds will be sent directly to the coffers of this space. EIT acts upon what my underdeveloped architect's mind would call the "Frank Lloyd Wright" approach to design. With a compression like the bottom of a canyon gaping wide to allow natural light to filter down to the rocks below. A space frequented by school groups, it serves as a wonderful interface between post- and pre-secondary educations. I've seen it used for celebrations, photography, conferences and more. It is well recognized as a jewel (pun

intended) of campus life. The space funnels activity without stifling it, and still makes space for classrooms, clubrooms, research and study cubbies. It is simply exemplary. Not only is it full of interesting things to learn, it also draws you into the learning with how the space guides you through, quite literally the flow of water encouraging you to search deeper. It plays with space in a way that my other loves make an attempt, but is flexible and accommodating to many different uses and users simultaneously. 10/10.



For five years of my undergraduate degree I lived north of campus. On the way home I was often struck by the sudden change in development. In many places it's welcome, it feels right, it is a relief from the city. I love the path near the creek winding its way past soccer fields, disc golf and Columbia Lake. Yet, on the other side of Westmount, the feeling shifts. What were once tree-lined windbreaks in my youth have been torn down to allow for the widening of streets. The loss on Bearinger struck me in an odd way as a youth. Biking along the Doreen Thompson trail, you no longer felt cuddled by the woods, but assaulted by cornfields laid nude against the road. As land was cleared to build the Harper Branch and University Gates, some of this was understandable, as too was the grove

surrounding the stormwater management pond, but the streets that cut through what was in the early nineties a farmyard (http://matt.wandel.ca/ruins/mystery_farm.html) I felt at a loss for clarity. Columbia Lake North is at the precipice of these design decisions, with the skeleton of a subdivision separated from what ostensibly is their driveway. While I was taking this photo I noticed a woman walk straight into the overgrowth at the edge of the property. Turning a corner, she landed on the paths set not too many moons ago. It has me thinking in many ways about what we leave behind at the end of humanity. Our half baked ideas laying quietly under the stalks and brambles. The reason I so loathe the area is not just the constant roar of impetuous automobile, unbroken by treeline or respect for the speed limit (which often come hand in hand (it's to do with visual doppler effects, but I digress)) but the uncertainty as to what the space is to be. Climbing the now-hill where the farmhouse once stood on level ground, I feel a pang of guilt for our development north of Laurel Creek. This space remains vacant, and the road at Columbia Lake North remains as wide as everywhere else despite housing only occupying one side. To be honest, I'm unbothered by the high-voltage cables, but they do frame the world below of nature as separate from that of lightning above, oblivious to the paths cut and left lone.

Spaces that I loved blend various needs together well. They focus our minds on how we can compliment the work and life of others without substantial intrusion. They play with our sense of scale, and handle differing numbers of people, but always feel intended for the groups that do use the space. There is no off kilter occupancy, the room is neither too large nor to cramped, or possibly, as is the case of the EIT lower floor of the museum, able to adapt by snaking its way around displays and other small pleasing emotional and auditory barriers.

Spaces that I see a place for change are all interfaces between two worlds. Whether that be the edge of campus, the transition between our built and debuilt environ, or the space secluded but intended for all. These are places where our ideas of space are most in flux, and poor connection makes itself obvious. The lack of clear direction to enter, or interact makes the space hostile rather than welcoming.

More to come in 156.2...

sqrt(cause)

MORE COURSE CONFUSION

BY THE DUMBASS WHO FAILED THE CHE 102 FINAL IN THE WINTER TERM BY 2%, AND THEN PASSED THE SPRING TERM SUPPLEMENTAL BY THE EXACT SAME AMOUNT

Hi everyone! It's another study term for me, which naturally means that there's already drama with my courses three days in!

That's right, it doesn't even take a full week for things to come up for me. But first of all, let's start off with the context in which this takes place: I'm in my 2A Software Engineering term, which means that I'm in the last cohort of students to still be on the old course schedule. That means that this term, I'd normally be required to take CS 241, SE 212, ECE 222, STAT 206, CHE 102, and one "communications elective" of my choice from a very short list. And for the most part, my schedule matches up with this, with the exceptions that I'm taking the enriched version of CS 241, CS 241E, and that since I've now passed CHE 102, I have a free elective slot.

I had planned to take PSYCH 207 in person as my elective if it fit in my schedule, and to take it online otherwise. I liked the Cognitive Psychology unit of my AP Psych class back in high school the most, and PSYCH 207 counts as a natural science elective for my program. It would also count towards various options and specializations that I'd have access to through my program, so it'd keep my paths open.

So far, all good. First day of classes passes without incident, until right after my COMMST 223 class (at about 6 pm). That's when I get pulled into a conversation between a friend and her friend who's in Computer Science. In this conversation, her friend recommends we attend his Philosophy of Math

course because he thinks it sounds really cool and there's only like 20 people enrolled in it. It's just one hour on Tuesdays and Thursdays, and it fits perfectly between two of my classes where I would just be on campus doing nothing otherwise.¹

So Thursday, I went to the class. There were only 15 of us there along with the prof, and one of the other people was also not enrolled in the class. The professor was really nice about it though, she even gave us paper copies of the course outline and schedule that she had printed just in case some of her students didn't have an easy way to access the Learn page in class.

It was such a great first class and I found it really engaging in a way that most of my previous classes haven't been. We had actual conversations and discussions as opposed to it just being entirely a lecture. So now I just need to email my academic advisor to reassure my parents that switching my psych course for this one at this point in time won't affect my degree all that much.

This comes off significantly less dramatic than I thought this article was going to be when I started writing it. Oh well. I guess this article is just clickbait.

Sexy_Software_Babe

1. Yes, *theoretically* I could study during that time. In practice though, it strangely never seems to happen.

WOULD YOU LIKE SOME SHAWARMA WITH YOUR SALT?

RORDON GAMSAY'S GLORIOUS GASTRONOMICAL GALLIVANTING

Hello culinary plebeians,

My name is Rordon Gamsay and I am definitely not Gordon Ramsay. He is my incredibly successful second cousin. I am his even more amazingly successful second cousin because I write for **mathNEWS**.

Upon my arrival in Waterloo, the first shawarma establishment I sampled was Lazeez. I was informed that after my visit, it was inevitable that I would spend quite a bit of time shitting my guts out. With this in mind, I purchased a chicken shawarma on the rocks. The taste was unremarkable, even forgettable. The key point is that it didn't taste bad. Perhaps a little bit too much sauce (actually way too much sauce, it was basically a dip) but overall an acceptable concoction. I waited with bated breath for the shitting, but it never came. Perhaps my stomach is simply too strong, fortified by all the horrible food I've eaten.

Next, was Shawerma Plus. Yes, Shawerma with an e. For this establishment, I was told of its cultural significance. For consistency purposes, I ordered a chicken shawarma (sorry I mean shawerma) as well. This shawerma was drier with quite a bit less sauce, something I appreciated after my Lazeez adventure. The chicken was quite a bit more flavorful and the sides paired well. It was not a life-changing adventure, but I could understand why it was a cultural experience.

Emboldened by my previous shawarma experiences, I decided to try the SLC Shawarma Hut next. That was my first mistake: assuming that all shawarma is created somewhat equal. Again, I decided on chicken shawarma. I was hungry and full of hope for this new shawarma experience. When I finally opened up the takeout box, I was greeted with an immense amount of what seemed like yogurt sauce. It looked more like toothpaste. Was there even shawarma in there? All I could see was a gelatinous mass. Undeterred, I excavated what I thought was chicken and took a bite. I nearly spat it out. It was so horrifying I can barely find words to describe it. The one word that came to mind was "salty." It felt like I had gargled a whole box of salt. Overwhelmed with pain, I mistook a glob (yes it was so gelatinous it was chunky) of yogurt sauce (I hope it was yogurt sauce) for chicken. Somehow, it was even saltier than the chicken. I tried to balance it out with some of the rice, but that too was over seasoned. There was more salt in this tiny takeout box than there was actual food. I couldn't even be disappointed because I was impressed at the sheer amount of sodium contained in such a small receptacle.

In the end, I managed to finish half of it, the rest being thrown away with all my hopes and dreams. Perhaps one day I will grow powerful enough to conquer the Shawarma Hut version. For now, I think I'll stick to Lazeez and Shawerma Plus.

Rordon Gamsay

RANKING N DISCORD GAMES

GOOBER DASH — 10/10

A multiplayer racing platformer where you play as little goobers, basically a 2D version of Fall Guys. Very fun to destroy your friends in, no microtransactions except for cosmetics which you can earn from playing. Amazing.

BATTLETABS — 7/10

Battleship but with abilities tied to your ship, a good level of strategy and randomness that makes it fun. You can unlock more ships by playing the game but have to recharge using in-game currency after a few games. Some ships can only be unlocked through microtransactions. These last two facts heavily drop the rating but the game itself is good.

BOBBLE LEAGUE — 5/10

Turn-based soccer where you fling your players into each other and the ball. Can collect items to boost your chances and help you win.

COLOUR TOGETHER — 2/10

Click on a drawing to color it in, you're basically using the fill tool but some segments are super small and annoying to find. Not great.

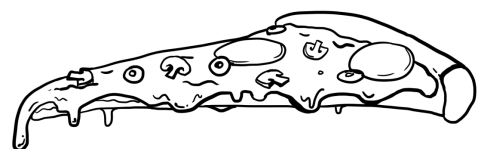
FARM MERGE VALLEY — 1/10

Brainrot Brainrot Brainrot Brainrot Brainrot, save yourself.

CHEF SHOWDOWN — 7.92635/10

Cooking with friends except you're competing against them and stealing their meals for your own profit. 86% chance you'll want to commit murder.

Catboy Supremacy



MY LIST OF WHAT EACH MATH MAJOR WOULD BE AS FRUITS

PLEASE DO NOT EAT THE MATH STUDENTS, DESPITE HOW APPETIZING THEY MAY BE PORTRAYED

I will not be elaborating on my motives or motions of this list, but I will instead offer an elaboration on why I propose such a metaphorical comparison for each major.

Let us begin.

Actuarial Science: Pomegranate

I have never taken an actsci course, but I'm sure their brains are filled with wonder and intelligence, no matter how nitpicky the course content can sometimes get.

Applied Mathematics: Apple

You deserve the apple simply because you actually do stuff with your work, and you actually solve real world problems. You are the most useful math major in the real world.

Biostatistics: Corn

Blending the rules, a corn is actually a fruit, much like you are blending the disciples of statistics and biology. You don't conform to strict rules, and neither should your fruit.

Business Administration (Laurier) and Computer Science (Waterloo) Double Degree: Zucchini

You guys are math students at heart, no matter how serious you tried to hide behind the BBA facade. Also zucchini is a fruit, and before you start arguing, just Google it.

Business Administration (Laurier) and Mathematics (Waterloo) Double Degree: Avocado

Despite your best efforts, some of y'all are unpleasantly difficult to work with, especially with your biggest prestige on doing two degrees at once. But I will give you credit, you guys are quite intelligent (delicious).

Combinatorics and Optimization: Banana

Y'all let this program get to your head, and y'all optimize way too hard. Anyways bananas are ridiculously efficient energy wise so you get a banana.

Computational Mathematics: Star Fruit

Honestly, Computational Mathematics majors are someone I have never met, so I'll let the most rare fruit I have only seen once in my life take the position.

Computer Science: Durian

Take a shower man, y'all stink. An acquired taste, especially for employers. But to some, you are necessary in their life and they will defend you for the rest of your life.

Computing and Financial Management: Blueberry

To quote a CFM friend: "Trying to explain what CFM is to an employer is impossible." Side note, why does a blueberry have 3 colours in all forms except blue?

Data Science: Cantaloupe

I never been unpleasantly surprised by a data science major, plus they always seem to be very interesting and likeable. Like a Cantaloupe. Also Cantaloupes are among the fruits gifted in Japan.

Unfortunately, my attention span has been distracted by the elusive charcoal pizza. I will return next **mathNEWS** for a part 2.

And please, eat your fruits¹ and drink water.

Fruit Enjoyer

All comparisons are not to be taken seriously, unlike your score in the fruit game Melon Maker or Fruit Ninja.

1. It has been previously brought up to the Math faculty that math students potentially lacked the necessary amount of fruits in their diets.

SOMEONE WAS USING MY FAVOURITE WASHROOM ON CAMPUS

I had just made the five-minute walk¹ from the centre of campus to my favourite washroom, only to discover it was occupied. This is a disaster. I have spent hours exploring almost every corner of campus and did not think this locale would be uncovered in such little time. Whether it be equally curious first-years, revealing Redditors, or word-of-mouth... PLEASE REFRAIN FROM DISCUSSING WHAT IS MY FAVOURITE WASHROOM. iykyk.

This is a reminder of the utmost prerogative to gaslight, gatekeep, and girlboss plz & thx :)

Whole Number Haver

1. This is quite fast. I will walk up to 15 minutes to use my favourite washroom.

THE ABSOLUTELY 100% COMPLETELY TRUE VERY REAL STORY ABOUT THE TIE GUARD AND EDCOM

The following report came from a source who asked not to be named, for fear of their life. However, we are inclined to believe their tale.

“Order! Order!” screamed the tiny moderator to no avail. “Please, ORDER!”

“It must have been you!” shouted one of the furious Math O-Team representatives. “Your entire lives are about destroying the beauty of mathematics!”

“You’re telling me that you couldn’t have predicted the storm with all of you fancy statistics and theorems?” an Engineering O-Team member retorted furiously. “Besides, isn’t the whole point of your precious ‘Tie Guard’ to keep that pink monstrosity safe?”

“PINK MONSTROSITY!” cried multiple Math O-Team members incredulously. One actually made an attempt to leap at the offending Engineering O-Team member.

Suddenly a loud blaring horn sounded through the room, nearly deafening everyone. “ENOUGH!”

That came from The Black and Gold Figure. The moderator very gratefully moved away from the center of the room as The Black and Gold Figure took charge. All of the previously fearless O-Team members who were just clamoring and screaming quieted. If and only if for The Black and Gold Figure.

“This meeting is not to decide who is responsible for the recent destruction of the Math Faculty’s Pink Tie. Although, all evidence points to the cause being a freak of nature.” This was added to much muttering, though it quieted as The Black and Gold Figure cast a withering stare across the room.

“This meeting is about settling this Math and Engineering war, once and for all. You cannot destroy each other’s property. Your militarized secret services cannot harass students of the opposite faculty. Your fight is starting to affect others as well now. The Faculty of Science has been complaining non-stop about their own students arguing for either side. But, especially, you must stop for the sake of the Software Engineers.”

Both sides were silent.

“This is not the 1980s. Math and Engineering are not two separate groups, but two faculties tied together. The Software Engineers depend on both of you to succeed. *They* need you to end this fight.”

Thoroughly cowed, the O-Team members said nothing. Finally, a tentative Math representative finally spoke, “We can’t simply dissolve our Tie Guard. The Pink Tie *must* be protected.”

“We can’t break up Edcom either!” an Engineering representative said. “They are essential to our orientation.”

“That is the same as the Tie Guard!”

“If they are legitimately essential to orientation then they do not have to disband completely,” The Black and Gold Figure conceded. “However, they cannot continue as they have been. Any open fighting must come to a close.”

“Then they will work in the shadows!” multiple O-Team members from either side declared.

“The Edcom will continue to protect our engineers from the insidious influence of impractical proofs.”

“And the Tie Guard will keep to its sacred mission of protecting the glory of the Pink Tie. They will keep those who wish protected from the ugly applications of mathematics, while ensuring that all those who wish to face them, may. They will pursue new connections with the other faculties, through business, physics and more. They will even face down the Engineers, and be prepared at all times for peace or war. This they will do, always and forever, to the benefit of all in Mathematics and most of all, FOR THE PINK TIE!”

Our source also added that if you were interested in joining the Mathematics Secret Service, also known as the Tie Guard, that all you have to do is [—REDACTED FOR FACULTY SECURITY REASONS—]

pencil

HOW DO DOUBLE DEGREE STUDENTS SURVIVE FROM SH*T LAURIER BBA COURSES

Having courses that cannot be swapped or changed is definitely a disaster!!! Can you imagine a student needing to rush from MC to Lazaridis Hall in 10 minutes?!?! BTW I am taking a language course and have to rush from LH to Renison in 10 minutes and rush back to Schlegel Building on Wednesday morning, that would never work lol

AKEIJIN



BETTER THAN QUARTER TONES

WHY 31 NOTES PER OCTAVE IS BETTER THAN 24.

There are twelve notes per octave. On a piano, seven white keys and five black keys. On a guitar, the octave is the twelfth fret. Et cetera.

But why? There's no rule of the universe that those twelve frequencies are the only ones allowed!

So, sometimes people stretch the limits. Cut the steps in half, and work with twenty-four notes per octave.

But it doesn't really work. The new intervals just don't sound good. You end up with two twelve-note scales that don't interact with each other.

We can do better. It's not that more notes is a bad idea, it's that *twenty-four* notes is a bad idea. I recommend *thirty-one*, though there are other good choices too.



Let's look back at how the twelve-note scale is constructed.

We start with the circle of fifths. **C, G, D, A, E, B**, and then on into the sharps. But there's a problem. If each of these fifths is perfectly tuned, the major third from **C** to **E** won't be! It doesn't line up, basically because $81 \neq 80$.

(This causes problems when tuning guitar strings by ear! Four perfect fourths and a major third just *don't quite reach* two octaves.)

So we *distort* the perfect fifths, shrinking them slightly until the major third is well-tuned.

But there's a second problem. Our scale contains an infinite number of notes! We start with **F-C-G-D-A-E-B**, but we can sharp or flat them as many times as we want.

So we distort the scale again. We *force G* sharp to equal **A** flat. This is a bigger distortion than the previous, essentially forcing 125 to equal 128. But it nicely closes up the scale, leaving us with twelve notes per octave.



Back to quarter tones. If we're splitting the steps in half anyway, let's do something about that distortion. Instead of forcing **G** sharp to equal **A** flat, make it equal **A** flat-and-a-half!

Now even the usual intervals are more in tune—major and minor chords are beautiful in this system. And there's a reason to use more notes—now that **G** sharp and **A** flat are different, you might end up using both of them.

And on top of that, we have some beautiful *new* intervals: the subminor third from **C** to **E** flat-and-a-half, and the subminor seventh from **C** to **B** flat-and-a-half. A twelve-note scale

distorts these beyond recognition, trying to force $35 = 36$, and a twenty-four note piano doesn't do very well either. But this scale hits them beautifully.

All in all, this scale, with its thirty-one notes per octave, is my top choice for beautiful music.



A word of warning: If you go to the effort to add more notes to an instrument, it's really tempting to overuse them. I suspect that's why most microtonal music sucks.

So don't do that. Remember that even the usual notes are tuned more beautifully in this system. Reach for double-sharps if you want, but do so sparingly.

finegeometer

**AAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAA**

Have you ever been afraid of:

- Missing your first class of the term?
- Being unmuted on a work call with everyone from the organization in it?
- Being stuck in the middle of an intersection because your car is not working?

Well, I have, and due to unluckiness levels too high to be comprehensible, they all happened to me. All in the same cursed week.

By the time the third disaster happened, I was ready to leave society behind, run to the woods, and live off wild berries and regret for the rest of my days. Erasing my existence sounded pretty tempting too—just CTRL+Z myself out of reality and take a permanent vacation from life.

Realistically, I had no choice but to keep moving forward, the world (sadly) did not end. I got notes from a classmate, awkwardly contributed to the work call, and had my car towed to the shop. It should be fixed by the time you're reading this (hopefully).

Now, although I can't hide from the soul-crushing embarrassment I feel every time I think about this week, I've learned how to cope: by screaming into the void.

leah

MY EXPERIENCE WITH COQ

So I was a professional Coq handler last term.¹ I even got paid to do it. And this is just a review of that.

I worked as a URA where I had to formally prove facts about a language calculus. I had no prior Coq experience and had only encountered formal languages in that one week of CS145 with lambda calculus. From the get go, I was recommended to read the paper about the proof (52 pages) and Software Foundations (a book with so many volumes I don't even remember). Both of these resources, albeit being super useful, were very intimidating and scared me away. I only read a chapter of the book and skimmed the paper enough because you only have so much time on a study term. I just jumped straight into the codebase, which was fortunately already written for us. We just had to change the underlying data structure and rewrite all the proofs for that.

Did straight up jumping into codebase work for me? Yes. Would I recommend it to anyone else? Probably not.

The project was very fun though and Coq is a nice language to work in (I love functional programming). Even though I did not pre-learn the content, the rewriting of proofs taught most of it to me. In conclusion, I love Coq and would recommend.

0.423

1. I definitely did not write the entire article to say this sentence.

N THINGS I HEARD FROM THE mathNEWS EOT

- The disaster of Fall 2019's **mathNEWS** EOT. There are two Roundtable board game cafes in Waterloo Region, and half of the writers went to the wrong one
- The primitive means of communication in the last decade, i.e. via phone calls and emails vs. Discord
- It is anime that brings **mathNEWS** together
- You should read **mathNEWS** when slacking
- William Lyon Mackenzie King conducted rituals to talk to the corpse of his mother. Also his boyhood home is in Kitchener
- Free Bus Trip to Gatineau Park in Ottawa
- Why the investment in Generative AI is unsustainable
- Recommendation algorithms in social media
- Player's choice of being good or evil when playing video games like Mass Effect. The choice is very important, speaking from the POV of the collective thoughts of human beings/future generations of AI

eralogos

PIKMIN BLOOM: HOW TO BLOOM WHITE FLOWERS

SUMMARIZED FROM A REDDIT GUIDE

Let's use the flower Helleborus as an example. We will assume that the flower is untouched.

1. Have a stockpile of Red, Yellow, and Blue Helleborus.
2. Plant a total of 150 Red, Yellow, and Blue Helleborus while planting no more than 90 of each color.
3. Plant normal white flowers for the remaining bit

You could technically do this with two colors, but you have a greater chance to mess up since you have to plant between 75 and 90 flowers.

Caution: If you exceed 90 flowers of any color, the big flower will bloom into that specific color. I suffered from this personally so be warned.

This guide is summarized from: https://www.reddit.com/r/PikminBloomApp/comments/18k9fpu/guide_a_virtually_riskfree_method_of_blooming/

Wrigglesworth

N REASONS YOU SHOULD GO TO HACK THE SOUTH THIS WEEKEND

OR HOW I LEARNED TO STOP WORRYING AND LOVE DC 1350

- It's better than Hack the North
- No boilerplate generative AI browser assistants/emoticon generators/gooning simulators (WHAT?), only a set of meritocratic mind-bending logical, social and spiritual challenges that will truly test your intellect
- Free food
- It's better than Hack the North
- Our admissions are equal opportunity (if you apply, you are guaranteed to get in)
- The posters are better
- I actually managed to reserve a room this time somehow
- Many prestigious sponsors such as Joe Biden
- If you're reading this on Friday, there's still time to sign up at <https://discord.gg/8vYcKJmhKh>
- It's better than Hack the North

epic_waterman

THIS PROD NIGHT'S PIZZA SELECTIONS

I have included the vote count in brackets. Bolded and starred selections were ultimately ordered. Recommendations were not taken past 7:31 PM.

In order of recommendation:

- **[7, overridden to 1984] Vegan Cheese, Plant-Based Pepperoni***
 - Vegan selection wins by default. For selection purposes, 1984 votes were considered. Literally 1984.
- [10] Pepperoni and Pineapple
 - My personal suggestion. Why did people not order this?
- [10] Mushrooms, Portobello Mushrooms
- [7] Hot peppers, Pepperoni, Green Peppers
- **[14] Triple Cheese (3x Mozzarella)***
- **[15] Chicken, Bacon, Ground Beef***
- [10] Mushroom, Spanish Onion, Grilled Chicken
- [5] Peppers (Not Hot), Black Olives, Sautéed Spinach
- [9] Green Peppers, Mushrooms, Onions
- [5] Chicken (No cheese. No sauce. Just chicken.)
 - This was amirdadp's deranged suggestion. amirdadp orders this every Saturday. He provided photo evidence of of this monstrosity. His roommate expressed that he should seek professional help and confirmed this is real. Everyone else concurs.
- [9] Grayscale Pizza (Charcoal Base, Black Olives, Tomato Sauce, Spanish Onions, Mushrooms)
- **[13] Double Cheese, Double Pepperoni (Purportedly "Boring")***
- **[14] Pesto Base, Grilled Chicken, Sundried Tomato, Roasted Garlic***
- **[11] Cheese, Pepperoni, Bacon (Purportedly "Normal Pizza")***
 - Why are we instituting the concept of "normal"?
- [4] Pepperoni, Spanish Onion, Hot Honey
- **[15] Burger Pizza (Cheddar, Ground Beef, Bacon)***
- [10] Hot Sausage, Roasted Red Pepper, Hot Honey (gildED Pizza)
 - gildED has long graduated. Hot honey is gross on pizza. *[Editor's Note: This writer is wrong.]*
- [4] Bacon, Spicy Sausage. Pepperoni
 - Why is this so unpopular???? Seems reasonable.
- [10] Pineapple, Sundried Tomato, Hot Honey
- **[11] uknightED Pizza (Green Pepper, Roasted Garlic, Ground Beef)***
 - uknightED's legacy continues past graduation.
- [3] Chicken (Plus cheese. Plus sauce. Just chicken.)
 - Confusingly less popular than amirdadp's sauceless, cheeseless pizza. The least popular option. mathNEWS writers are fickle.
- **[14] Sliced Tomatoes, Bruschetta, Sun-Dried Tomatoes***
 - Delicious. I wish we could order multiples.

- **[11] BBQ Base Hawaiian***
 - BBQ base is just upsetting as a concept.
- [6] Chicken, Black Olives, Mushrooms

mathNEWS assumes 0.33 pizzas per person. There were 30 people in the room so 10 pizzas were ordered.

QUAAAAAAAAAACK

THE HIT NETFLIX MOVIE TALL GIRL

AND WHY YOUR TALL FEMALE FRIENDS SHOULD BE FORCED TO WATCH IT

A wise man once said: "I am only interested in a girl's height if it is above 5'11." That wise man was me. And no, it isn't because of any sort of romantic preference, it is purely business; the business of *Tall Girl*.

If you have any tall friends who happen to be women, they should be convinced (bribed with alcohol if necessary) to view this film. It is not a good movie, neither is it a very deep movie. However, the joy of being able to reference this movie to your tall friends will last forever, and their anger at you doing it will be unlimited. The classic "size 13 Nikes" joke gets even funnier each time I say it, and I don't care what anyone else says. Humor such as "how's the weather up there" is certain to get the entire squad laughing, as far as me, the director of the movie and nobody else is concerned. And really, that's what makes it fun.

P.S.: Fun fact about this movie: Tall Girl's sister in this movie is played by Sabrina Carpenter. At the time of my first viewing of the movie (circa 2020, my first of around 4), I had absolutely no clue who she was. I only realized about a year ago that she apparently can sing too, but I don't care. For me, she is forever Tall Girl's sister.

Shahabee

AN ODE TO M4

MC, DC, M3,
 The trio of our dreams.
 But soon another joins the fray,
 Hello M4, we cannot wait!
 A time will come when you are built,
 Pink ties will be amongst your midst.
 Math friends and foes from all around
 Will come and marvel at the sound.

headphones97

N MATH JOKES

What do you call a number that can't keep still? A *roamin'* numeral.

What's a math teacher's favorite place in NYC? Times Square.

Why was the obtuse angle always so frustrated? Because it could never be right.

How do you stay warm in a cold room? You go to the corner—it's always 90 degrees.

What's a math teacher's favorite dessert? (this should be easy) Pi.

Why didn't the two 4's want any dinner? Because they already 8!

Why did the student do multiplication on the floor? The teacher told him not to use tables.

Why can't a bicycle stand up by itself? It's two-tired!

What has hands but can't clap? A clock.

What do you call fake spaghetti? An *impasta*!

tsdhami

LINEAR LOVE STORY 4

A CONTINUATION FROM VOLUME 155

A line with countless names

$$y = 3x + 12$$

$$x - 1/3y + 4 = 0$$

$$(6, 30, 0) + (1, 3, 0)t, t \in \mathbb{R}$$

The intersection of planes $12x - 4y + 2z = -48$ and

$$2x - 2/3y + 14z = -8$$

is known by many.

Some love its simple names

that are easy to plot.

Others love how it interacts with others,

the final answer to their problems.

Most importantly though,

no matter how strangers see it,

or how much more important other lines may seem,

the line just loves existing,

and just existing is okay.

Totally Ununimodular

mathNEWS

N EXCERPTS FROM WUSA SEZ ARTICLES IN mathNEWS ORIENTATION ISSUES

2020

- We represent your voice on issues like tuition and financial aid (OSAP), mental health, housing, co-op, campus safety, and transit
- Want to start a club, make change on campus, or improve your educational experience? We're here to help you make it happen!
- Any Waterloo undergrad can run for a position

2021

- We're your friendly neighbourhood student union, dedicated to advocating for and supporting the needs of undergraduate students
- We represent and amplify the student voice on matters like affordable & high-quality education, equitable access, and student safety & wellness
- Any undergraduate student can start or join a club!

2024

- I'm Nicholas Pfeifle, your student president with a record breaking number of votes, to absolutely autofellate my own horn

aphf

this is the kind of thing that I would expect to see in Waterloo Math's undergrad newspaper mathNEWS!

SAID BY UWATERLOO PROFESSOR PATRICK LAM UNKNOWINGLY TO A mathNEWS EDITOR AFTER THEY STATED ON AN UNRELATED SOCIAL MEDIA WEBSITE THAT THEY'D BE AT LEAST IMPRESSED IF THEY WERE BROKEN UP WITH BY MATHEMATICAL PROOF

GUTEN TAG

gridCOMMENT 156.1

hallo und willkommen to waterloo mathematics everyone, but more importantly, welcome to **mathNEWS**.

q: what is **mathNEWS**?

a: the best publication on campus.

q: who are you to make that statement?

a: the **gridMASTER**, spaghettihinhalers.

q: what do you do for **mathNEWS**?

a: i make the **gridWORD**, a puzzle found at the very end of each issue of **mathNEWS**, along with a **gridQUESTION**. every issue, a lucky solver who sends in their solution gets picked to win the ultimate prize (a 5\$ math cnd gift card hooray!!!)

q: sounds good, i'm loving it already. don't you mean the crossword?

a: it is a **gridWORD**.

anyways. the **gridQUESTION** for this issue is: what would you do if you found a dead body in a hotel room? please send your **gridWORD** solution, **gridQUESTION** answer, and pseudonym to mathnews@gmail.com by tuesday, september 24, 2024 at 12 am cet (aka monday, september 23, 2024 at 6 pm edt)

best of luck to everyone for this term, and best of luck in solving this **gridWORD**. the theme might probably be related to where i am right now, idk though, just a thought. what's lolchess.gg in german? ok tschüss!!!

spaghettihinhalers

ACROSS

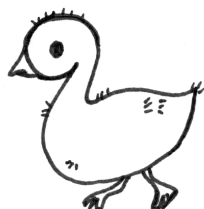
1. Hunger
5. Pepper's partner
9. What an MC grips
12. Filly's mother
13. Assist illegally
14. Japanese port
16. Closeness
18. Utah lilies
19. Site of a 1976 uprising
20. Slender
22. Harvest
24. ___ slaw
25. Sheik's bevy
28. Harness parts
31. Chinese tea
34. Purple smoothie berry
35. Thus far
36. That ship
37. Ashes holder
38. Thick, creamy soups
39. Pop duo ___ & AJ
40. Bro's sib
41. Inability to recall names
42. Caffeine nut
43. Big deal
44. Washer cycle
45. Bad lighting?
46. Speck
48. Rajah's wife
50. Preserver*
54. Work boot feature
58. Fine fiddle
59. Unhook
61. Anatomical sac
62. Creative spark
63. Sporting blade
64. Saskatoon-to-Winnipeg dir.
65. "Go, ___!"
66. Commies

5. Pago Pago's place
6. Hezekiah's mother
7. Reply to "Shall we?"
8. Texter's sign-off
9. Set 12*
10. Sacred image: Var.
11. Detective's assignment
14. Diffuses, as through a membrane
15. Convince
17. Couple
21. Summer cooler
23. Light particle
25. Native of Nigeria
26. Bitter
27. Data-holding malware
29. Monroe's successor
30. Mage*
32. print("___ world!")
33. Indo-European race
35. More chic
38. Ancient Persian empire region
42. Warrior*
45. Auth. unknown
47. Feedbag fill
49. First-stringers
50. Honey
51. Flightless flock
52. Do some cutting, maybe
53. Depend (on)
55. Superhero accessory
56. Mellowed
57. Micturates
60. Expanse

1	2	3	4		5	6	7	8		9	10	11		
12					13					14	15			
16				17						18				
19						20		21						
			22			23		24						
25	26	27				28	29	30			31	32	33	
34					35						36			
37					38						39			
40					41					42				
43					44					45				
			46	47				48	49					
50	51					52	53		54			55	56	57
58						59		60						
61						62					63			
64						65					66			

DOWN

1. Rapsallions
2. Purple bubble tea flavour
3. Boast
4. Witchcraft*



SUN SEP 15	MON SEP 16	TUE SEP 17	WED SEP 18	THU SEP 19	FRI SEP 20	SAT SEP 21
	Collect Rocks Day	Add period ends MathSoc Clubs Day		International Talk Like A Pirate Day WUSA Clubs and Societies Day	Course selection begins WUSA Clubs and Societies Day	National CleanUp Day
SUN SEP 22	MON SEP 23	TUE SEP 24	WED SEP 25	THU SEP 26	FRI SEP 27	SAT SEP 28
	mathNEWS 156.2 production night (6:30pm, MC 2034)	Tuition and fee deadline Punctuation Day!	Drop with WD begins		mathNEWS 156.2 released to the world	Ask a Stupid Question Day

I (ACTUALLY) LOVE TENSORS

/SRS I PROMISE

Last term, I wrote [I Love Tensors](#) in 155.4, bemoaning my difficulty in understanding these arcane constructions. Recently, I've been wanting to understand bialgebras towards the goal of doing things with Hopf algebras and so tried learning them over the break. I am happy to report that I did not in fact retreat into the Boreal Forest, and somewhat even understand them now! I believe the issue was two-fold, which I'll outline.



Firstly, how I used the book. I mean no disrespect to Mr. Ryan, as the issue was me. It was much beyond my level, which itself would not have been a problem as this was for a Directed Reading Program, but I also did not make proper use of my advisor. Those hours spent poring over pages I did not understand could have been saved by simply asking her, instead of strange notions about being a bother (as I was literally

supposed to be trying to learn from her), so that led to not getting as much out of the book as I could've.



Secondly, the approach the book used. Again, this is not an attack on Ryan (I'm sorry ☹️), but the book constructed the tensor product of F -vector spaces X and Y as $X \otimes Y = B(X \times Y, F)^\sharp$, the dual space of the space of bilinear functionals on the cartesian product. The universal property was introduced later, and proofs, at least for the portion I got to, were done with this construction. Many embeddings into other spaces were propositioned and I had trouble wrapping my head around why certain things were true or being motivated about this construction at all.



So what changed? When asking for a book on tensor products, Professor Jason Bell recommended Keith

Conrad's notes, which were a much gentler and more algebraic approach. Conrad starts with the concept of bilinearity, in what sense bilinear maps are not linear, what sorts of maps and compositions are bilinear, and so on. Then, elementary tensors are introduced as objects satisfying bilinear properties, and he works towards introducing the tensor space of R -modules X and Y as the unique R -module, up to homomorphism, for which every bilinear map from $X \times Y$ to an R -module Z , there exists a unique R -module homomorphism (R -linear map) from $X \otimes Y$ to Z . The bilinear tensor map from $X \times Y$ to $X \otimes Y$ is also unique, meaning all bilinear maps factor in a sense through the tensor map and a linear map. This extends to k -linear maps, and is the point of tensor products. Conrad then provides an explicit construction satisfying this property, just to show existence, and all proofs are done through the universal property. I found this approach much better for me :).