



“HOW WOULD YOU CAUSE A SOLAR ECLIPSE?”

Happy `{Date.now()}`, my loveliest readers!

Another successful **mathNEWS** issue. One of many more that you will read, hopefully, but the final one that I will help edit. And what a glorious way to go out—the writers have really outdone themselves once again. We’ve got MathSoc board games, battle royale battle royales, Renison being insensitive jerks, more Zutara fanfic, and a surprisingly large amount of poetry? I’m not sure what’s up with that, but I’m here for it.

And that’s all I’ll be here for. Enjoy the issue!

Naman Sood (*caffeinatED*)
Editor, **mathNEWS**
W21–W22, F23, W24

My last **mastHEAD**, huh? Hard to believe it’s already here. I didn’t write too many; I find it difficult to write a good one. That said, I can tell the time has passed. In my first **mastHEAD**, I excitedly discussed the reopening of the Math CnD. Now, I don’t eat there much—I’ve eaten the same food too many times.

I’ll miss editing, of course, and working with such fantastic people. But you came here to read **mathNEWS**, not my ramblings, so go ahead, read on. And please take note of this issue’s *excellent* cover.

Daniel Matlin (*distractED*)
Editor, **mathNEWS**
F22–W24

God, it’s starting to feel like a retirement home in here. I’ve been dreading the day for years, but age comes for us all. As much hair as I’ve lost over this silly rag, I’m going to miss it a lot—it’s been my one through line since I started here, and **mathNEWS** has some of the best people in the world.

That said, even I can recognise when I’ve earned a break. I hope that, if I see **mathNEWS** again in fifty years, it’ll still have that same awesome energy. And *you*: come write for **mathNEWS** and keep it that way.

Evan Girardin (*evaluatED*)
Editor, **mathNEWS**
W23–W24

| | |
|---------------------------------|---|
| ANDOOIII | Throw Bonnie Tyler, writer of “Total Eclipse of the Heart”, into the sun. The sun’s core will have an eclipse and boom. |
| NO PUN INDENTED | go to michaels and pick up some clips. apply technology to make them e-clips. close one eye and hold them up to the sun. |
| BSGCG | I’m hot |
| YALEVOYLIAN | With a solar tablet |
| PINK BOMB | Nuke the sun. No sun = permanent eclipse |
| SEXY_SOFTWARE_BABE | i’d toss a solar blanket over the sun |
| NORMALPARAMETERS | so much effort to make it dark why not just close your blinds |
| __INIT__ | I will simply enter the windowless mathNEWS office where you can’t see the sun |
| TENDSTOFORTYTWO | graduation cap, hopefully |
| BIG A | cause on a solar till it eclipses |
| RAPIDEYEMOVEMENT | Northrop Grumman B-2 Spirit Strategic Stealth Bomber flying over the fields of Missouri |
| APHF | Dyson sphere |
| WATER | 5 billion years |
| WHOLE NUMBER HAVER | solar? i barely know her! |
| JEFF | Undefined behaviour |
| ROCKFACTS | using my immense knowledge of rocks I would create a second moon |
| POPCORN ROCK EATER <3 | getting TRIPLE—no, QUADRUPLE anchovy pizza at mathNEWS prod night |
| CUTLET | kite |
| MOLASSES | i think i would ask very politely |
| BOLDBLAZER | something something kerbal space program redirect the moon |
| DOLLAR STORE PERSON | As a deal with Big A that if I drag the moon in front of the sun, they’ll write another chapter of UW Zutara fanfic ♪ |
| LARS NOOTBAAR | Shift my weight to my right foot (altering the weight distribution of the earth and changing the orbits of the solar system). |

ARTICLE OF THE ISSUE

Congrats to denko! We all loved *marginalia*. You’ve moved from **gridWORD** prizes to the big leagues; see MC 3030 for your prize.

distractED
Editor, **mathNEWS**

Is choking on your own spit a workplace incident?

DANIEL MATLIN, **mathNEWS** EDITOR FOR WINTER 2024
ALONG WITH OWEN GALLAGHER, EVAN GIRARDIN, AWAB QURESHI,
NAMAN SOOD, AND ISABELA SOUZA

mathASKS 154.6

FEATURING mathNEWS EDITOR BEFUDDLED

NOT_A_UW_STUDENT_(YET): HOW DID YOU CHOOSE YOUR PSEUDONYM? (WRONG ANSWERS ONLY)

Pseudonym? Dick Smithers is my real name!

(Bonus correct answer: Dick Smithers is my character's name in a long running Call of Cthulhu game I've been playing since high school. He's a hard-boiled 1920's detective who smokes two cigars and dual-wields pistols. It was the dumbest-sounding name I could think of. I use my worst Nixon impression to voice him, and it's my authorial intent that all of my articles be read in that voice.)

CLASSIFIED: WHY DID YOU CHOOSE THE NAME BEFUDDLED?

I think the word befuddled is funny and we should say it in more situations. "This STAT 231 quiz befuddled me." With your help, we can make this the linguistic trend of 2024.

MOLASSES: TELL US ABOUT A KEY ANNOYANCE OR PITFALL OF GAME DEV AND HOW YOU WOULD SOLVE IT.

I wish game development didn't have such a high barrier of entry, at least compared to other artistic hobbies like painting or writing. While you can and should use a game engine, you still need to have *some* baseline understanding of programming, which is a filter that turns a lot of people away. It might be hard to imagine for the **mathNEWS** audience, but programming does not come naturally to everyone!

Sure, you can just be an artist or a designer, but then you still need to find a programmer, which could be just as hard if you're just starting out. I can't count how many people have told me "I'd love to make games, but I just can't program!"

Fortunately, I think the solution is already here: more robust level editors and visual scripting tools within existing games, to ease people into the hobby without them needing to learn how to program. I'm really impressed by Fortnite Creative. Epic has done an incredible job turning the most popular game in the world into a platform from which they hope to spawn the *next* most popular game in the world. I'm certain that the most beloved game designer of the 2050s is getting their start right now by messing around in Fortnite Creative.

WARRIOR1RULES: FAVORITE GAME?

Breath of the Wild. It's the game that made me decide I wanted to make games for a living.

MOBPSYCHOFAN: WHO IS YOUR FAVORITE VIDEO GAME CHARACTER?

The hot tub Stormtrooper from LEGO Star Wars: The Complete Saga.

PLATYPUSGOD: WHAT ARE YOUR OPINIONS ON BATTLE ROYALES?

It's not a genre I find myself drawn to, but I don't know if it's something I have against battle royales specifically, or just the few I've played.

I tend to prefer games where you're constantly in the action (or at the very least, always making some interesting decisions), games where the time between "mistake made" and "getting to apply the learnings from the mistake" are low, and games where each loss feels like a mistake I had a fair chance to avoid.

Most battle royale games aren't like this. They tend to have lots of time between engagements (or at least any choice more interesting than "go where loot is"), the long game length means I could be spending a *lot* of time between death and getting to play again, and getting sniped by a player across the map I didn't have a chance to see never feels good. None of these are necessarily problems for everyone, mind you—for many people, these things are the *appeal*. It's just not for me.

CULTURED BATTLE ROYALE GAMER: HAVE YOU MADE ANY BATTLE ROYALES?

Not yet, but I've got a few ideas... (What would a 4X game you could complete in three hours look like? Would it be fun? Would battle royale mechanics help?)

PLOVER: WHAT ARE YOUR THOUGHTS ON THE ROLE OF DECEPTION IN ATTRACTING A MATE? HOW DOES ONE BALANCE THE NEED FOR SINCERITY AGAINST THE DESIRE TO BE LOVED?

Woah, it's plover! I'm your biggest fan!

The romantic in me wants to say that you should be completely honest at all times—after all, why would you want any kind of love but the love of someone who completely understands you? Otherwise, it's not *you* that's loved, it's their constructed idea of you. If you can't be honest with the people you love, what's the point?

At the same time, I understand that it isn't practical to be completely honest with others at all times. We're *always* putting on a facade of some kind. I act differently around my professors compared to my parents compared to my friends, and that's normal.

Another wrinkle is that love could be a driver for you to change who you are, or even something that changes you without realizing it. What happens when the person you were at the start of a relationship is different from the person you are at the end? So many relationships end when the person "turned out to not be who I thought they were", but isn't it more likely that the "person they were" changed?

I'm not a love expert by any means, but what I try to do when building a relationship (platonic or otherwise) is to escalate honesty. I look for people who I can slowly be more honest and open with, and who get more honest and open with me in return, with the understanding that we're both always changing and what we need from each other now might not be what we need forever. It's rare, it's difficult, and it takes a very long time, but every time I've gone through it, it's been worth it.

B'EF UNWELLINGTON: LINKEDIN???????? (WHAT ARE YOUR THOUGHTS ON THE LINKEDIN?)

GRIND NEVER STOPS 

__INIT__: WHAT'S SOMETHING UNDERRATED IN NIAGARA FALLS?

I get this question often, and I think there's been a misunderstanding: there's nothing good in Niagara Falls. That's why I like it. I cannot in good conscience recommend anything there, I only enjoy it because I'm a sick and twisted person at my core. (Although, if you insist on going anyways, that go-kart track on Clifton Hill is a decent deal.)

MOLASSES: IF YOU WERE AN ESTABLISHMENT ON CLIFTON HILL, WHICH ONE WOULD YOU BE?

I would be the unlicensed LEGO attraction which burnt down in 2014 and subsequently became a Pizza Pizza—used to be cool, but now ground down by the weight of my adult obligations to actually make money and contribute to society.

NOT_A_UW_STUDENT_(YET): FAVOURITE PLACE ON CAMPUS?

The mathNEWS office. Come say hi! We don't bite!

NOT_A_UW_STUDENT_(YET): ANY TIPS ON GETTING INTO UW COMPSCI? (CURRENTLY WAITING FOR THE EMAIL)

People put a lot of stock in being specifically a Waterloo *Computer Science* student for the prestige of what that means, because everyone knows how hard it is to get in here. But doing something for prestige is a bad idea, because prestige is fake, and as soon as you get your first job, *no one* will care where you got your degree.

What's *actually* going to matter in 10 years? The things you learned in and out of the classroom. Waterloo has some great teachers, for sure, but the things I treasure the most about being here are the people and the culture. It's being surrounded by smart, ambitious, funny people who push me to be better. It's the co-op program, which gives me the opportunity to travel the world and figure out what I want to do. It's mathNEWS and the Game Dev Club, where I get to make things (and help other people make things) that make people happy.

None of that requires me to be in Computer Science specifically. Clubs and co-op postings and friend groups are open to

anyone from any program. Even most of my CS classes have been ones that you don't need to be a CS student to join.

There's no shame in backing away and finding something that fits you better. I will always endorse trying to push your own limits, but don't push so hard you hurt yourself. Good luck, and I hope to see you at a prod night soon!

ROCKFACTS: WHAT IS THE BEST NEW YORK TIMES GAME AND WHY?

Connections, because it's the only one I can consistently beat you at.

LARS NOOTBAAR: WHAT IS THE CORRECT WAY TO PLAY ROCK, PAPER SCISSORS?

"Rock, Paper, Scissors, Shoot". It gives you enough time to let the drama build, and is a rhythmically pleasing four beats compared to three from "Rock, Paper, Scissors", but is also short enough to still be punchy and not lose any of the immediate excitement.

Now, let me address the allegations that I'm a proponent of the use of "Rock, Paper, Sci-scissors, One, Two, Three", a rhythmically disastrous seven-beat version of the game. I want to unequivocally say that this is untrue. What *is* true is that this is a correct, accepted version of the game to play in Niagara, and I will vigorously defend my home region's unique cultural traditions against the crushing, overwhelming force of Big Waterloo. I may not like it, but I will defend people's right to use it without mockery or ridicule from the majority.

ROCKFACTS: WHAT ARE YOUR THOUGHTS ON THE RECENT COMMITMENT BY THE CANADIAN AND US GOVERNMENTS TO CREATE AN OFFICIAL INQUIRY INTO THE MASSIVE SELENIUM POLLUTION ISSUE STEMMING FROM COAL MINING IN BC?

Frankly, we aren't putting *enough* selenium in our water supply. We should be going harder. Glad the feds are finally stepping in to set this right.

ROCKFACTS: PT 2, DO YOU THINK THIS WILL ACTUALLY PROMPT MEANINGFUL CHANGE FOR THE INDIGENOUS GROUP DISPROPORTIONATELY AFFECTED BY THE MINES?

The cynic in me wants to say that the answer to the question "will this prompt meaningful change for Indigenous groups" is almost always no, but I'll try to stay optimistic. One would hope that the Indigenous people who have been living for decades in these poisoned communities would see their healthcare and social rebuilding paid for by the group responsible for poisoning them, with strong regulatory barriers against this kind of pollution in the future.

The more likely scenario is that the government fines the companies involved, puts up some new regulations, and then calls it a day without making sure the affected people are actually properly compensated for what happened to them,

and everyone else moves onto the next concurrent environmental crisis.

Of course, that's assuming that both Biden and Trudeau stay in power. As much as I have issues with both of those governments at the moment, I trust them way more to deal with this kind of problem than a Trump/Poillievre coalition—which is looking increasingly, frighteningly possible.

CAFFEINATED: COFFEE OR TEA? EXPLAIN YOUR ANSWER.

Whenever I drink coffee, it's because I bought it with my own money. Whenever I drink tea, it's because my generous friends offer it to me. Since free food always tastes better, I have to go with tea.

LEAH: WHAT IS YOUR FAVORITE THING TO COOK?

I grew up in a household with an amazing Italian grandmother who would make sauce and meatballs from scratch at *least* once a week. It was one of my most treasured childhood rituals, and at the risk of sounding cliché, I've never had any sauce as good as hers in my life. I like to send her pictures of when I make pasta for myself—although I rarely ever make the sauce myself since I came to campus. I just don't have the time. My favorite meals are the one or two times every term where I get to actually make the sauce like she does.

NOT A N*RD: WHAT ARTICLE ARE YOU MOST EXCITED TO WRITE NEXT TERM?

I have a song parody that I've been dying to write for almost a year now but I've never had the time to get around to it. This is the term, I can feel it. Stay tuned.

TENDSTOFORTYTWO: WHO'S YOUR FAVORITE WRITER?

molasses.

CAFFEINATED: WHAT DO YOU SEE IN THE FUTURE OF mathNEWS?

It's clear to me right now that **mathNEWS** is in something of a golden era. The reason for this comes down to, in my opinion, a slowly snowballing quality standard. Very few people like to be the one putting in the most effort. For some reason, no one likes to look like they care the most. But as more people write high-quality content for **mathNEWS**, it becomes more natural to put more effort into your own piece.

I'd also be remiss not to mention the other editors. Culture comes from the top, and the example set by our last few batches of editors has been one of intense focus on quality and a deep respect for **mathNEWS** as an institution. I mean, did you see the 50th anniversary issues? Did you see how seriously we took the archives project? How could that passion *not* trickle down?

So what comes in the near future? I see no reason to believe that **mathNEWS** has peaked. It'll take some intentional curation of our culture, and a focus on making sure we keep engaging our readers in new ways and inspiring our writers to give a thousand percent every time. We, as editors, need to take the history of **mathNEWS** as seriously as it deserves, without losing the tongue-in-cheek irreverence that people come to us for. We as writers need to stay curious and inquisitive and weird.

I think an advantage for the long-term future is our deliberately low-tech format. It's not an accident that we focus so much on physical distribution and printing real issues. So much amateur writing these days is done online, which has advantages, but getting it in a physical magazine you can hold in your hands, with a specific physical target audience that allows you to know *exactly* who you're speaking to, is an authorship experience that will become increasingly rarer in the connected, digital world.

But **mathNEWS** is made by its writers and readers, so really, the one who answers that question should be you.

CUTLET: HOW LONG DID IT TAKE YOU TO ANSWER THESE QUESTIONS?

How many hours are in two weeks, again?

ISSN 0705-0410

UW'S BASTION OF ERUDITE THOUGHT SINCE 1973

mathNEWS is a normally fortnightly publication, funded by and responsible to the undergraduate math students of the University of Waterloo, as represented by the Mathematics Society of the University of Waterloo, hereafter referred to as MathSoc. **mathNEWS** is editorially independent of MathSoc. Content is the responsibility of the **mathNEWS** editors; however, any opinions expressed herein are those of the authors and not necessarily those of MathSoc or **mathNEWS**. Current and back issues of **mathNEWS** are available electronically via the World Wide Web at <https://mathnews.uwaterloo.ca>. Send your correspondence to: **mathNEWS**, MC3030, University of Waterloo, 200 University Ave. W., Waterloo, Ontario, Canada, N2L 3G1, or to userid mathnews@gmail.com on the Internet.

mathNEWS is overseen by the Board of Publications, an autonomous board of the Federation of Students, University of Waterloo, hereafter referred to as Feds. **mathNEWS** is editorially independent of Feds and the Board of Publications. **mathNEWS** has never been requested to withhold Improper Content as defined under Feds Policy 71.

Except where otherwise noted, this work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works 2.5 Canada License. To view a copy of this licence, visit <https://creativecommons.org/licenses/by-nc-nd/2.5/ca/> or send a letter to Creative Commons, 559 Nathan Abbott Way, Stanford, California 94305, USA. Terms may be renegotiated by contacting the **mathNEWS** Editorial Team.

THANK YOU

Thank you to the unknown Math Orientation 2019 volunteer who put my copy of the **mathNEWS** orientation issue in my orientation bag. I have a photo of it lying among the other contents of the bag dated August 31, 2019, 3:19 PM. I remember reading it and being delighted by the quality of the publication. I thought to myself for a second that whoever edited such an unflawed final product must be the coolest group on campus. Somewhere deeper, I also wondered if I could ever edit it as well. But I wouldn't listen to that voice. I didn't think it could happen.

Thank you to lafayeeet. It's honestly a miracle that we met so immediately at Orientation. You showed me that those close to me, those who I viewed as my peers, could just go and write for **mathNEWS**. I wasn't ready to go in first year, so I didn't then, but you opened the door to the possibility. You also got me loosely into TSA and PMC, which allowed me to meet a few others, like Vincent.

Thank you to Vincent. I was eating alone in the SLC on February 9, 2022, three days after I returned to UWaterloo for the first time since March 2020, when you sat down with me because you recognized me from before the pandemic. I had already attended two online production nights at that point but had said not more than ten words total. That one short lunch made me feel like I could join in again, instead of remaining little more than a ghost.

I can't thank the following people enough: tendstofortytwo, jeff, cy, girafarig, Cix, and again, Vincent. You helped me find a spot within **mathNEWS** and I felt welcomed very quickly. Before I knew it, I was considering applying to be an editor. Though Spring 2022 didn't work out—I was away for almost the first half of the term—I was accepted to start editing in Fall 2022. My dream was alive.

Special shout-out to jeff. When I came back to campus in mid-Spring 2022, I popped into the PMC office to see who was around. jeff first greeted me and then did a double-take since I hadn't been around for a while. His excitement to see me again blew away the fear I had on returning. In my time away I had once again started to talk less with other writers and when I arrived I felt like I was maybe making a huge mistake; I had no place to stay and no very close friends I could count on, far away from any family. To be honest, it was crazy that I returned and just... Airbnb-hopped while securing a sublet for the second half of the term. I would not recommend this strategy to most people.

I've been living my dream for five terms now and I guess that's a good tenure. I'm not the same person I was before. I don't get very nervous about whether or not I can be part of something, I just join in. I've done a lot in my time as editor: copyedited many articles, corrected what must be millions of typos, automated some of our finances, and put out too many fires. But probably what mattered most was that I could help others who feel the way I used to. I wish I had done more of

that (I probably *should* have done more of that) but I'm happy with what I was able to do.

Thank you to blinchik. Thank you to my family. Thank you to anyone who is or was my friend. Thank you to those I mentioned earlier and to boldblazer, UW Unprint, water, hu, and the many others who I can't enumerate for sanity reasons but thought of while writing this article. Between all of you, I always had someone who I could talk to if needed. I have a sometimes scarily permanent memory and the many little conversations I've had with so many amazing people within the Math Faculty (and outside of it, too) will stick in my head forever, I hope.

Thank you to all the editors who I worked with. Thank you to terrifiED, clarifiED, and god ⚡ peED; you were the senior editors that helped me gain confidence in the role. god ⚡ peED, you are literally the funniest person I have ever met. (Special thank you to terrifiED for successfully passing along the finances-editor role to me. Now I need to do the same....) Thank you to caffeinatED. You helped keep us together as a team following the exodus of those editors I already mentioned. It wasn't easy, but it was very, very important. Thank you to the younger editors who I trust to keep **mathNEWS** alive. I can breathe easily knowing that you're around to keep it going. And thank you so, so much to evaluatED. As a **mathNEWS** editor, you were the heart of the publication. We all know about your unequalled devotion in your work on the anniversary volume and in archival. But a heart is more than a symbol of emotion; it also performs the constant, critical driving of blood through the body. More than all the other editors, you kept up with the small background tasks that could otherwise slip by and wear the organization down. You were the heart in every sense. And outside of your role as **mathNEWS** editor, you're just the person who, more than anyone, has made my time here truly amazing. I won't thank you, because it would take up more space than what I've already written.

cutlet / distractED
Editor, **mathNEWS**
F22–W24

P.S. to all future editors: please don't get rid of the couch in the **mathNEWS** office. It's comfy and nice to work on.

SIDE EFFECTS

REFLECTIONS ON WEEK ONE

When I didn't experience side effects, I thought, "What kind of a scam is this? I can't believe I'm *not* experiencing them."

And when I *did* experience side effects, I thought, "What kind of a scam is this? I can't believe I'm experiencing them."

N TENDSTOFORTYTWO N THINGS ARTICLES

N^2 THINGS? KN THINGS? SUM OVER ALL I OF N_1 THINGS?

N TENDSTOFORTYTWO STATS

- First **mathNEWS** issue written in: **mathNEWS** 141.3
- Last **mathNEWS** issue written in: **mathNEWS** 154.6
- Total **mathNEWS** issues written in: 76
- Longest streak of issues written in: 72 (**mathNEWS** 143.5–**mathNEWS** 154.6)
- Articles published: 133
- Operating systems reviewed: 9
- Articles of the issue: 1 (**mathNEWS** 143.1)
- Writer names used: 12 (see below)

N TENDSTOFORTYTWO WRITER NAMES

- tendstoftwotwo
- DSC UWaterloo
- R. E. Porter
- caffeinatED
- wall outlet
- caffeinated (all lowercase)
- tendstoftwotwoEDed
- **mathNEWS** Lead Ignorant Layperson
- Mama Nadella
- guy who really likes titles
- lugubrious
- ██████████
(get **mathNEWS++** to find out this writer's real identity today!)

N TENDSTOFORTYTWO SENTENCES

- There is a kind of article in **mathNEWS** that isn't written for the benefit of the reader, but rather for the benefit of the writer.
- One example of such an article is this one—that's right, the one you're reading right now!
- It's not for you, it's for me to feel good about myself.
- Though you are also allowed to feel good from reading it, if you want.
- Anyway, I'll get to the point.
- **mathNEWS** has been, without a doubt, the greatest thing to happen to my university career and life.
- In addition to that, it's also the most influential—I cannot even begin to conceive what my university life would look like if not for **mathNEWS**.
- Sure, I've been involved with MathSoc and WUSA, but only because I was encouraged to do so by the people I met here.
- Sure, some people know me from Reddit, but that's always been a parasocial relationship—**mathNEWS** has been where I've formed the connections that most fulfilling to *me*.
- I'm gonna leave **mathNEWS** now, once I stop being an undergraduate math student.
- But I hope that **mathNEWS** is as positively life-changing for some of you as it has been for me.

- That's all, I think.
- Remember to like, subscribe, and hit that notification bell for more **mathNEWS** issues like this one!
- And remember to check out this article's sponsors:

N TENDSTOFORTYTWO SHOUTOUTS

- to cy, for all the times you've heard me rant about problems that neither of us can fix, and nobody else can know about,
- to girafarig, for your unique ability to provide solace through reframing strategically disadvantaged situations into strategically advantaged ones,
- to CC, for motivating me to be my best self where I need to be, and being there to help me wind down and calm down where I don't,
- to boldblazer, for helping me work through who I want to be, and giving me the help necessary to get there,
- to Golden, for showing me beautiful new worlds and helping me see the beauty in this one,
- to Vincent, for showing me the power that my actions have, and that situations were rarely as complicated as they seemed,
- to cutlet, for listening to me and understanding me with a care and deliberation that nobody else has,
- to jeff, for being there to pick up on my slack and help me deliver when I couldn't do so on my own,
- to __init__, for that one time when you helped me buy a typewriter from a stranger in a parking lot in pouring rain,
- to 別, for helping me navigate the beautiful worlds of linguistics and seasonal anime,
- to palepinkroses, for making me feel appreciated on some of my worst days,
- to Prof. Prabhakar Ragde, for your reminder that **mathNEWS** is only a passing phase in all of our lives,
- to Rose, for keeping MathSoc from falling apart,
- to clarifiED, for helping me grow both as an individual editor and a member of a team that respected and trusted each other,
- to George, terrifiED, and god ⚡ peED, for showing me the Rube Goldberg-esque contraptions that keep **mathNEWS** going,
- to classified, befuddLED, awED, and [NAMES REDACTED], for keeping this beautiful rag alive when we're all gone, and standing up to drink the Orbitz otherwise in our stead,
- to you, my dearest **mathNEWS** reader! See you in the future. ☺

tendstoftwotwo / caffeinatED
Editor, **mathNEWS**
W21–W22, F23, W24

PUSH ME

Fuck, I'm graduating. The obvious thing to write about here would be what **mathNEWS** means to me in the abstract; how I made most of my friends because of it; how it was being an editor—that sort of thing. Shortsightedly, though, I squandered that opportunity by already writing about it for my **mathASKS** in **mathNEWS** 152.1. That was almost a year ago now, but I'd still say mostly the same things. I could also spend a thousand words thanking people I love, but my friends are already doing that way better than I could.

Instead, I'm going to write about getting pushed around.

I had to be pushed into almost all the stuff I did here. Until pretty late into my time here, I was too shy to do almost anything on my own. I needed someone's support; I needed to be pushed and encouraged, and pretty persistently at that. So, I think it's right to dedicate my last article in some way to Vincent, the guy who pushed me into doing stuff.

You know how I got involved in the Pure Math Club? I got pushed into it! I heard about the club through some friends and went to one of their online disorganizational meetings (this was during COVID) with vague intentions of running for some position, but I was too shy to put myself forward. When we got to the last role—VP Pop—nobody was volunteering to do it, and Vincent said “Evan, you run.” I pushed back a little but ultimately succumbed after he insisted. Once I was in the role, I made the mistake of starting to care, and I put a lot of time into doing extra stuff that I thought would be cool. Next term I was secretary, and for pretty much the next two years, I was president—people seemed happy with me doing it, so I kept doing it, and honestly, I liked getting to push the envelope and do cool stuff for the club. PMC was the bedrock for a lot of what I ended up doing here, and I made some of my best memories there. I'm so happy I got pushed into it.

MathSoc? Same deal. I was pissed off at one of my professors (as was the rest of the class) for their frankly *terrible* assessment scheme, and so I wrote something on the board before class telling people to contact MathSoc to advocate the issue to the faculty. That professor wasn't particularly pleased, and I don't know how effective it was—probably not very—but after I talked with Vincent about it, he practically *insisted* I run for Council. I did, and, even more, he got me to run last-second for the Board of Directors to stop an overwhelmingly bad candidate from getting the seat. And finally, in the spring term, he kept pestering me to run for president until, with no other viable candidate stepping forward, I finally buckled and did it. All of that, and the following year I spent as chair of the Board, is owed directly to Vincent. A lot of pain and suffering, but I won't lie and say there wasn't some part of me that enjoyed it.

mathNEWS was the one of the few things I didn't need to be pushed into. I love **mathNEWS**. From my first prod night in Fall 2019, there was a growing part of me that wanted to be an editor. If not for COVID, I might've actually tried a little sooner—or maybe not. It always just felt like such a divine

and unattainable thing: the editors were so good, the team was pretty full, and I really didn't feel like I had much to add. But by the time Winter 2023 was on the horizon, that team was on their way out the door, and plans for the anniversary volume hadn't been firming up, so I finally decided I had something to add. I had so much fun doing the anniversary volume, tracking down old issues and editors, and helping to bring on the next generation of editors. It's one of the most annoying and fun and frustrating and wonderful jobs I've ever had, and I'm glad I started when I did. I'm so happy to be leaving the future of this rag to the folks who will be running it all next term.

Anyway, here's the point: get involved. Convince yourself you have something to add. Make time to meet people and make friends, and make yourself stick to it on a consistent schedule. Walk up to conversations and integrate yourself. Put yourself in positions to get pushed into things. Do things that you can do better than anyone else. And this one's *really* important: **push people into doing things**. Be persistent about it. You can't tell yet, but you could change their life. I'm serious. I'm not always a super confident person, and I probably would've had a *bad* time here if it weren't for my friends that pushed me to do things, had faith in me, and encouraged me.

So thanks, Vincent, for pushing me into doing things. As much as I protested, I was happy to do everything I did.

jeff / *evaluatED*
Editor, **mathNEWS**
W23–W24

N PODCASTS I'VE BEEN LISTENING TO LATELY

As a language learner in a busy study term (and a one-hour-and-a-half-long commute), I decided to start listening to some podcasts in the languages I am currently learning (Italian and German):

Here are some of my favourites:

- *Learn Italian with Lucrezia* (learnitalianwithlucrezia.blog/2017/10/09/my-podcast/)
- *The Teacher Stefano Show* (www.teacherstefano.com/podcast)
- *Easy Italian* (www.easyitalian.fm)
- *14 Minuten — Dein tägliche Portion Deutsch* (14minuten.de)
- *Ab 21 — Deutschlandfunk Nova* (www.deutschlandfunknova.de/podcasts/download/ab-21)
- *Easy German* (www.easygerman.org/podcast/subscribe)

INDIRECT BINDINGS AND ENDINGS

The year is 2024. You're old now, and you're settling into retirement. The sun is setting on a pleasantly warm early-spring day. Sitting on your porch, ready for the inviting afterglow, your tired hands crack open a copy of your favourite publication: **mathNEWS**.

Ha! You chuckle. *Those were some good* **profQUOTES**. *Can you believe they said that? Unreal.* Satisfied, sunlight whisking itself away faster now, you turn the page. It's a jeff article. C++. Your eye twitches, your heart pumps a little faster, and a forgotten primal instinct begins to set in. *No. You will not be defeated. Not now.*

The article asks you to consider the following C++ code:

```
int main() {
    int i = 0;
    int&& p = i;
}
```

Seasoned C++ veteran you are—tough creases in your skin, post-war trauma in your brain, and scar over your eye—you already see through the folly. This code will not compile: `i` is an lvalue of type `int`, incompatible with `p`'s declaration.

Fine and well. How about this instead?

```
int main() {
    int i = 0;
    double&& p = i;
}
```

Your heart, a seedling of child's joy left, says this must not compile either. Your brain, rotten and sour, says that nothing is good in this world. Your brain is correct: **this code compiles**.

The sun is down and the moon is bright. A soldier mounts his final offensive.



Clearly, something about references works a little funny. It's time we look at *binding rules for reference initialisation*. From *cppreference*:

[...] Given the type of target as `U`, the reference either binds directly to target or binds to a value of type `T` converted from target. Direct binding is considered first, followed by indirect binding, if neither binding is available, the program is ill-formed.

When you try to initialise a reference (say `R r = u` for a reference type `R` with `u` having type `U`), the compiler makes two key checks: that the reference you're initialising is an lvalue reference (i.e. `R == T&` for some `T`), that the thing you're initialising it with (`u`) is a non-bit-field lvalue, and that `U` is exactly `R` up to reference, i.e.,

`std::remove_reference<R>::type` equals `std::remove_reference<decltype(u)>::type`. In our case, the first check fails—we're initialising an rvalue reference for `g`'s argument.

There's a secondary check that happens to see if `u` has class type and can be implicitly converted to a type reference-compatible with `R`, but we're just using primitive types like `int` and `double`, so we won't worry about that. Regardless, *direct binding* has failed—this applies to both of the earlier code snippets—so the compiler instead evaluates the possibility of *indirect binding*.

Indirect binding only applies if `R` is *not* reference-related to `u`. Well, that counts out the first version of the code, and we can see why it didn't compile. But the second version is initialising an "rvalue reference to `double`" with an "lvalue reference to `int`". Recall that the problem went something like:

```
int i = 0;
double&& p = i;
```

In this case, a sequence of dominoes fall which cause the compiler to do some heavy lifting for us. In particular:

- The type of the expression `i`, on the right-hand side of an assignment, is deduced to be `int&` (see [Value Categories and Move Semantics in C++11](#) in **mathNEWS** 147.4).
- Because `double` is incompatible with `int`, `i` is implicitly converted to a *cv-unqualified* prvalue of type `double`; now, it's sort of equivalent to if we had written `double &&p = (double)i`. *cv-unqualified* implies that, even if we had declared `i` as `const volatile int i = 0;`, it would still work.
- Because we are trying to bind a reference (`p`) to a prvalue, *temporary materialisation conversion* is applied to the newly-created prvalue to convert it to an xvalue.

The real meat and bones of what's happening is the implicit conversion, which gives us a prvalue that `p` can bind to as an rvalue reference after converting it to an xvalue. There are a few details omitted here for class types, but it's mostly stuff about checking user-defined conversion operations.



Here you lie, dazed, spread open and face-up on a quiet and empty battlefield. You've conquered the enemy; perhaps you've conquered yourself. Or, despite it all, perhaps the enemy has finally conquered you. Maybe it's all the same. You know in your bones that this fight will be fought again one day—perhaps by you, but more likely not.

Torn pieces of paper dance through tall grass. You think you will fall asleep here—the stars are beautiful tonight.

RENISON CONTRACT TERMINATION REASON: SELF-HARM

HOW RENISON CAN EVICT YOU WHEN YOU NEED SUPPORT THE MOST

[Content warning: Self harm, suicide]

After data collection in 2016, the University of Waterloo released a report detailing that 14%, or one in seven, of their students had seriously considered suicide in the past year.¹ Take a look at six students around you. If you aren't of the fourteen percent, there is a high chance one of those six are. With suicidality so common, it is not a stretch to think self-harm similarly prevalent.

You probably know someone who has sought relief in their veins.

But do you know that Renison University College will evict them for it?

RESERVING THE RIGHT TO EVICT

In Clause 1.13 of Renison's residence contracts, Renison stipulates the following. Emphasis ours.

*Should there be evidence or reasonable doubt that a resident may pose a risk of harming themselves and/or others, the Assistant Director, Student Experience and Housing, **reserves the right to terminate the resident's Contract.***

*A partial or a complete refund of residence fees **may** be issued at the discretion of the Assistant Director. In less severe cases, a safety plan mitigating the risk of self-harm and/or harming others to the satisfaction of the Assistant Director, Student Experience and Housing, will be developed. It will include, among other requirements, a conduct agreement with Renison regarding the utilization of appropriate supports.*

Failure to adhere to the safety plan may result in the termination of the Contract. Furthermore, if a Resident requires more support than is possible to provide by Renison for the safeguarding of the Resident, Renison reserves the right to terminate the Contract.²

The residence contract for main-campus residences contains no such clause.³ Neither does United College in its documents available online.⁴ Grebel's residence contract asks for emergency contact information to report self-harm.⁵ Only St Jerome's has a similar clause to Renison, but with a distinctly compassionate theme where eviction is a last resort.⁶

Renison reserves the right to eviction from the start.

UNDUE HARDSHIP AND THE ONTARIO HUMAN RIGHTS CODE

The following protection is found within the *Ontario Human Rights Code*:

Every person has a right to equal treatment with respect to the occupancy of accommodation, without discrimination because of race, (...), disability or the receipt of public assistance

Although not true in all cases, it is not unlikely one engaging in self-harm suffers a mental illness. The Ontario Human Rights Commission (OHRC) names several mental illnesses as protected under the Code; those self-harming likely have a protected disability.⁷

The OHRC extends protections to all housing matters, including eviction.⁸ Although the *Residential Tenancies Act* does not consider universities landlords,⁹ OHRC policy states that housing protections *include* "private rental housing, co-operative housing, social housing and supportive or assisted housing."¹⁰ On-campus housing is unlisted, but it feels reasonable to think it included, given the other providers mentioned. Should Ontario Human Rights Code protections apply,

Housing providers cannot deny a person housing just because the person has, or is perceived to have, a mental health disability or addiction. Housing providers also have a duty to accommodate someone with a mental health disability or addiction.⁷

It may not always be possible to provide without resulting in undue hardship in terms of cost or the health and safety of the tenants' living environment. When the best possible accommodation would cause undue hardship, there is still a duty to put in interim or next-best solutions.¹¹

Eviction is not accommodation. Landlords are released from the duty to accommodate only if accommodation leads the landlord to "undue hardship". Ask yourself how much difficulty Renison incurs in students' choice to self-harm. Alone.

I cannot imagine it is unduly hard.

RENISON'S POINT OF VIEW

I asked Renison for their thoughts:

Our first priority is to ensure students belong to a safe and supportive community during their time at Renison. Renison provides 24/7 mental health first aid support with a residence Don team, and students can also access virtual and in-person one-on-one meetings with our Student Experience and Housing team, Campus Wellness and many other campus and community supports.

Our housing contract is designed to ensure students know support is available to them when and where they need it. No resident has had their contract terminated at Renison due to a mental health issue. A student may be asked to vacate residence only in extreme instances where Renison is unable to provide the necessary supports to sustain

life, and as such we cannot keep them safe, or if their behaviour puts the safety of others at risk.

It is valuable that Renison has yet to use their reserved right to evict. Renison's supports are also valuable, and included in students' safety plans. You may recall that in the residence contract, Renison stipulates that "*Failure to adhere to the safety plan may result in the termination of the Contract.*"

The argument that this clause has never been used to evict a student does not excuse the fact that it can be. One does not look down a loaded gun on the premise that no one will pull the trigger.

There remains work to do.

THE NEED TO DO BETTER

In some situations, it may be possible that Renison is legally justified in reserving the right to evict those who self-harm.

Would that make it okay?

Self-harm is not pursued when students are doing well. It indicates when students need their support system the most. Most Waterloo residence contracts don't mention self-harm; when they do, it is to provide additional support to those in need. When people self-harm, that is *not the time to make things worse*.

And yet, Renison has this fundamental apathy codified. There is no doubt of systemic discrimination, for the path from self-harm to eviction is *written into every contract any resident of Renison signs*. When students need support the most, Renison University College claims the right to take that support away. If Renison wants to protect residents from harming others, make the clause reflect it. Don't bring self-harm into it.

The "suicide school" label is not a badge of honour. Renison must change.

molasses

Sources

1. https://uwaterloo.ca/mental-health-wellness/sites/ca.mental-health-wellness/files/uploads/files/student_experience_panel_final_report_002.pdf
2. https://uwaterloo.ca/renison-student-experience/sites/default/files/uploads/documents/residence_contract_and_community_standards_-_2023-2024.pdf
3. https://uwaterloo.ca/campus-housing/sites/default/files/uploads/files/ug_2022-23.pdf
4. <https://uwaterloo.ca/united-college/sites/default/files/uploads/documents/appendix-a-for-dormitory-agreement-covenants-terms-and-conditions-2022.pdf>
5. Grebel's 2025 residence contract provided by anonymous source.
6. <https://www.sju.ca/sites/default/files/Residence%20Policies%20Handbook%202023-2024.pdf>
7. <https://www.ohrc.on.ca/en/human-rights-and-mental-health-fact-sheet>

8. https://www.ohrc.on.ca/en/social_areas/housing
9. <https://news.ontario.ca/en/release/41515/know-your-rights-and-responsibilities-as-a-student-renter>
10. <https://www.ohrc.on.ca/en/policy-ableism-and-discrimination-based-disability>
11. <https://www.ohrc.on.ca/en/policy-human-rights-and-rental-housing>
12. Personal communication, Renison University College, March 25 2024

Thanks to Nancy, Renison Communications Manager, for replying to my request for comment at 8:30 PM with only 24 hours notice. I am genuinely grateful for the quick turnaround.

AN OPEN LOVE LETTER TO BIG A

THE ZUTARA FANFICTION HAS BEEN FUELING ME

Dear big a,

You don't know me, but I know you. I have been reading your scattered Zutara Waterloo AU fanfiction in **mathNEWS**, and it has been the only thing getting me through my first year in Waterloo Math.

Every new edition of **mathNEWS** has me racing through the pages to discover what new creation you have blessed us with. Sometimes, I find what I truly want: Zutara. Other times, I find articles that reassure me of your continued existence. On the worst weeks, I dread the commonality that is... finding nothing from you. In those weeks, I miss you with all my heart.

Your *Water Water Water (Fire Fire Fire)* story and all following parts have sent me into a new and exciting world of Zutara fanfiction. Like many others, I shipped Zutara when I first watched ATLA, and like any gay bitch, I read a lot of fanfiction. Therefore, when I read your fic, my life changed. For whatever reason, I had never considered reading Zutara fanfiction. Now I have. It's good, but I haven't found any author that can compare to your writing. Never fear, big a. I firmly believe that no mortal being could measure up to you. I will always wait for you.

I hope to see a new part of your fanfiction when this edition of **mathNEWS** is published. If not, know that I will be eagerly awaiting what happens next. I will be on a work term this spring, but my brother will be here. I will send him to scour every **mathNEWS** publication for any sign of you, my love.

I sit in bed at night thinking of you, of the new content you can provide me. My greatest dream in life is to read all the Zutara content you will ever create.

Love,

gaya

DANA PORTER IS FOR WATERLOOVERS

TOO SWEET BY HOZIER IS THE FIRE

katara was wrong. he is a series of oppositions.

so easily—*purposefully*—loud when it's deliberately against her, and abruptly silent as he trails behind her up the stairs. he hesitates where he'd sprinted ahead of her before, watchful of every shadow—the pettiness she waits for vanishes, filled instead by something solemn, sober. even as her pace slackens in an attempt to bring him closer, he sticks stubbornly to the edge of her periphery—the same distance that stretched between them on the landing seems to stay, by habit or intention—and his eyes sweep over their surroundings.

(and when she glances back, they keep skipping over *her*.)

they've reached the third floor by the time it gets to her, their path marked only by the dim glow of exit signs at the end of every flight. it doesn't escape her that they still have six more to go, and katara heaves a sigh through her nose. "i'm sorry i yelled at you before," she ventures, at last.

he *laughs*—much to her surprise—and it's another proof by contradiction. she'd almost like to think she knows his laugh; the edges of it, jagged and caustic, rasping through the throat as though it might hurt just as much on the other end of the sound. somehow, the mirth practically spills from him here.

lee laughs like a kid too, and it is neither brittle nor biting. it's brighter than she ever expected.

(if she strains to pick it out, it might be tinged with a hint of warmth too. if she isn't imagining it, as red as the light carving through the gloom to touch him, rendering him real even in the dark.)

katara swallows, and musters some fragment of her usual pride—it's a little harder to find here, in this concrete prism, next to a boy who pisses her off and laughs like daylight. "what?" she demands, fixing him with a stare.

she gets to watch his smile widen, dry delight steeping into the bow of his mouth like the sun. "it doesn't matter."

she can't *understand* him. "what are you talking about?"

"look at where we are, katara." a shock goes through her at her name slipping from his tongue. "yell at me as much as you want."

she'd managed to break onto the next landing, but her feet stall, and she finds herself turning again. "no," she says, squinting, "i mean, yeah, sure, but that's not why you laughed like that. why?"

his grin hasn't faded yet, and he brushes past her with an amused huff. "you've just never apologized to me before."

she stands there, gaping at his back before she rushes to catch up to him. "well—don't get used to it!"

"that's fine," he answers, and he's still *looking at her*. and *smiling*. "i like that part of you too."

katara is too warm and too out of breath from all these stupid steps, but she can't let him win *now*. sighing, she shoves past him. keeps going upstairs without acknowledging it.

she beats him to the top.

>

"tell me something else about yourself."

his smirk is illuminated in blue this time, screen balanced loosely on his knee as he looks over the top. "what happened to that nap?"

"i can't sleep. tell me about you." she pushes herself up slightly from appa, soft fur sliding between her fingers. "what are you studying?"

he clears his throat and closes the screen, inching sideways to set it on the far corner. "well. my mom is dead. my father isn't. sometimes i think i wish he was. good enough?"

katara searches his expression—his jaw is set, eyes tense, but he looks back at her calmly. "yes," she says, "interesting choice, though."

"would you rather i told you my favourite vegetable?"

she shrugs, falling back into appa as she studies the ceiling now. "wouldn't mind—"

"cabbages." his brows are raised in that same wry humour she hasn't fully wrapped her head around when she peers at him—he's never spoken so much, this freely, this lightly. it makes her head spin.

makes her wonder if the locked doors are getting to him too.

(sokka had texted her hours ago, asking whether he needed to get aang. she'd told him she could wait it out.)

waiting it out, she thinks again, looking at lee. close enough. "i like sea prunes."

his mouth twitches. "why not?"

katara smiles back at him—maybe he'll try them some time, without spitting them out like aang—and pats appa's flank. when he hesitates—here, now, *why not*—she rolls her eyes and tugs at his wrist hard enough to send him sprawling across the white fur.

“it’s late. studying is useless,” she orders. “go to bed.”

“there’s only a few more hours until morning—”

“lee.” tentatively, her fingers graze the shadows under his eyes. he doesn’t quite lean into her touch, but he doesn’t move away either; his eyes drift closed as her palm comes up to cradle his jaw. “rest.”

>

when katara blinks awake, she’s alone. her thoughts are bleary—she’d been warm throughout the night, the space beside her is cold—but she can hear the voice far below, and it isn’t the one she’s used to.

“zuzu,” she hears by the time she reaches the lobby, and she freezes. “stop being ridiculous. mai’s been complaining about your absence and this needs to be done in twelve hours. all these other engineers won’t know what hit them when the competition starts. they never could.”

she knows that voice. *everyone* knows that voice, and its name.

everyone knows the other one too. but never together. never like this.

she sees him as azula leads him out the door. as if sensing the gaze, zuko—like ozai’s son, *the ozai, that son, engineer*—turns at the exact moment to catch her in the stairwell. and his expression goes wretched.

katara turns before she has to see anything else.

big a

PAUL “IT’S COMING SOON” WARD

In the annals of academia, Professor Paul Ward’s promises have become the stuff of legend, akin to ancient prophecies that never come to pass. His tenure as the instructor for SE 101 has left a mark not only on our minds but also on our wallets. With the finesse of a maestro conducting a symphony of delays, Professor Ward assured us that reimbursement for project expenses would swiftly grace our bank accounts within a month’s time. However, as the seasons changed and semesters shifted, his pledge remained as elusive as the mythical fountain of student financial stability. It seems the only software he’s engineered successfully is a perpetual procrastination algorithm. Perhaps in another bajillion years, we’ll finally receive our long-awaited reimbursement, but until then, we’ll just keep refreshing our bank statements like disillusioned digital scavengers in search of lost treasure.

Person who just wants their money back...

THEATRE PEOPLE ARE AWESOME

Two weeks ago (or something idk), the Kitchener-Waterloo Little Theatre had an event called March Madness in which four production teams (director + stage manager + actors) are given the same intentionally vague script, and perform it to an audience one week after seeing it for the first time. It is an aptly titled week, because one week is a *very small* amount of time to do this!

Anyways, my girlfriend Panda!Panda!Panda! is a theatre person and wanted to direct, so I offered to help with whatever stuff she’d need (mostly assembling and disassembling the set). I expected to have fun, but my expectations were lukewarm as someone who had very little interest in theatre.

I had SO much fucking fun doing this.

As the name suggests, KWLTL is quite small, so the sense of community between and among teams was awesome. Most participants knew each other, but those who were new got assimilated very quickly; by the final day, my initial anxiety about a bunch of new people had dissolved, and I had a blast chatting with random people while all four teams were jammed into the small backstage room (which, I learned, is called “the green room” in theatre lingo).

There was also such a cool atmosphere the night of the final show. Everyone had varying levels of tension, but everyone was passionate about the piece of art they had built together, and excited to share it with the audience. Since everyone had the same script, there were frantic last-minute rehearsals with two or three people reading for the same character in unison. The vibes were reminiscent of the minutes before an exam, but without the despair.

Theatre people are also just fucking awesome. They’re passionate, animated, and extremely unashamed of who they are. Thirty of these people in a tiny theatre is a recipe for absolute god-tier banter. For example, while taking down lighting equipment after the show, I heard the following exchange between Stephen (on a ladder) and Josh (walking around the ladder).

Stephen: “oh, sorry, am I in your way?”

Josh: “no, you’re good”

Stephen: “oh, I’ll try harder next time.”

Josh: “yeah! *do better!*”

Stephen: (begins crying)

Josh: “**YEAH!**”

Being surrounded by interactions like these, and participating in them, was fucking awesome. Also, shoutout to Davenport, Jensen, and Yizhu :)

GEOCACHING AT THE UNIVERSITY OF WATERLOO

REAL-LIFE EASTER EGGS

For the uninitiated, geocaching is a scavenger-hunting game for nerds. Players have hidden “geocaches”—often Tupperware containers, ammo cans, or key cases—all around the world, which other players navigate to using GPS-enabled devices. As of the writing of this article, there are 3,379,535 geocaches hidden worldwide; 58,111 of which are in Ontario and 7,246 of which are within 100 km of Waterloo. That’s a lot of geocaches!

I’ve been geocaching since 2012, and found more than any sane person will ever find—just under 13,000 so far. When I arrived on campus a year and a half ago, I was elated to see that there were geocaches hidden on campus. So, let’s take a look at a couple of them!

- “UWaterloser” (GC6D2E6) is very central to campus. It’s hidden on the veranda outside the Dana Porter library, in plain view of a librarian’s office. I took a look just now, and I don’t think it’s there anymore. Hopefully it’ll get replaced with something a little better soon!
- “Pickle Forks Sculpture” (GC98TYY) is just outside of the PAS building, beside—what I am just now learning is called—the *Pickle Forks sculpture*. Apparently, it used to be positioned outside Hagey Hall, but was moved when the enclosed courtyard was built. This one, luckily, appears to still be in place.
- “The Cobalt Star Mining Company—Discovery Mine” (GCADV0) is a neat one. There isn’t anything physical hidden; instead, it has you explore and learn about the mining exhibit at the Earth Sciences Museum on campus. I suspect that a majority of students have never stopped to look at any of the displays.
- “In Memory of Alex Foto” (GC5AJZZ) is nestled between the colleges, near the bridge to EV3. It’s dedicated to Alexandra Foto, a student who was killed by a vehicle while cycling in London.
- “Geocaching at the University of Waterloo: DC” (GC7ZPV6) is the most unique geocache hidden on campus. I showed this one to a friend once, who described it as a “real-life easter egg”—I have to agree. Who knew that a little secret like this could be hidden *inside* the DC library? Five out of five stars. You’ll have to find it yourself to learn why.
- “ü ☺ ö ☺ an obelisk!” (GCA2TVD) is hidden in the small bit of woodland between Renison and the V1 Green. Fun fact: I was the first player to find this one. It was published to the system just as I left the CS 145 final exam in Fall 2022.

There are a couple more, but this is a good spot to leave things. If geocaching sounds like fun, it’s as easy as installing an app on your phone. Just remember: if you find a geocache, all

you’re to do is sign the logbook and replace it as found for the next seeker.

thirdoffive

SONG RECOMMENDATIONS

LISTEN TO ALL OF THESE

1. **Happy Birthday.** This one is super relatable if you’ve ever been born.
2. **Mary Had a Little Lamb.** A cult classic.
3. **Pachelbel’s Canon.** The king of one-hit wonders.
4. **Painters of the Tempest.** Really good.
5. **All I Want for Christmas Is You.** Perfect for every single holiday.
6. <https://www.youtube.com/watch?v=dQw4w9WgXcQ>
7. **Bohemian Rhapsody.** The origins of this song are completely unknown, leading some to suspect it was created by aliens, like the pyramids were.
8. **Westminster Quarters.** Listen to this 96 times a day if you struggle with time management.

wacfeld

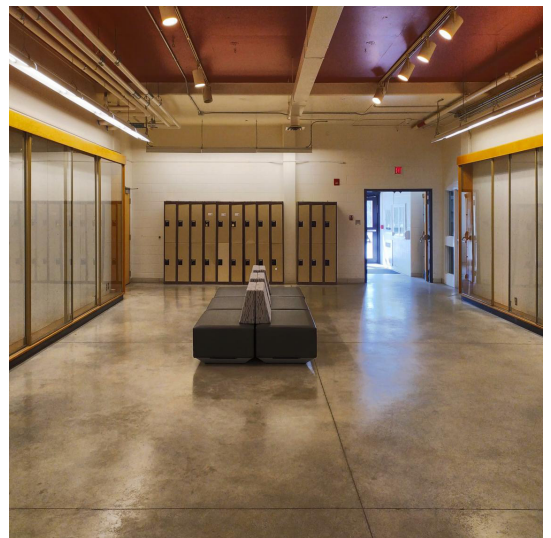
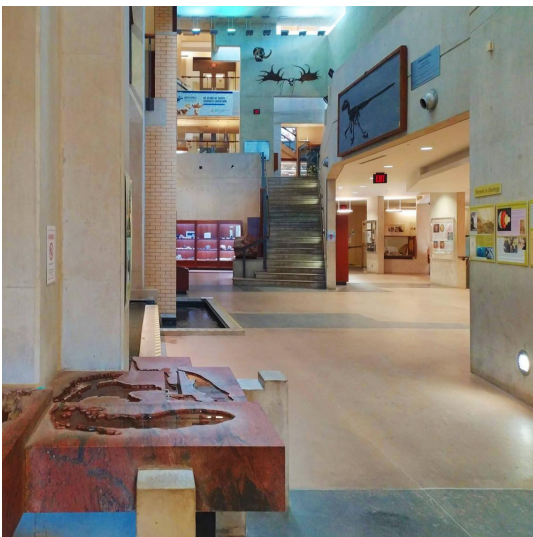
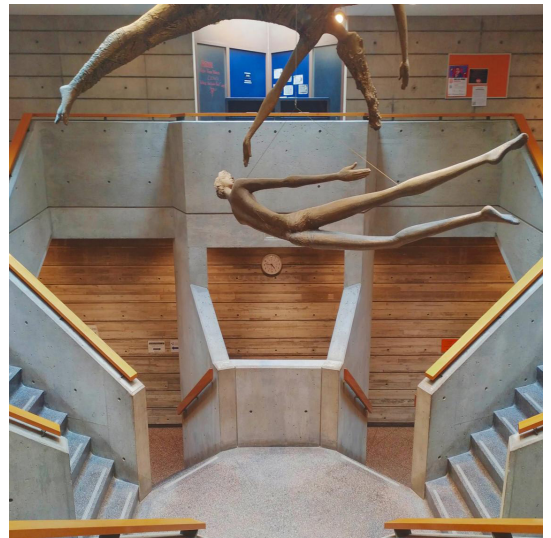
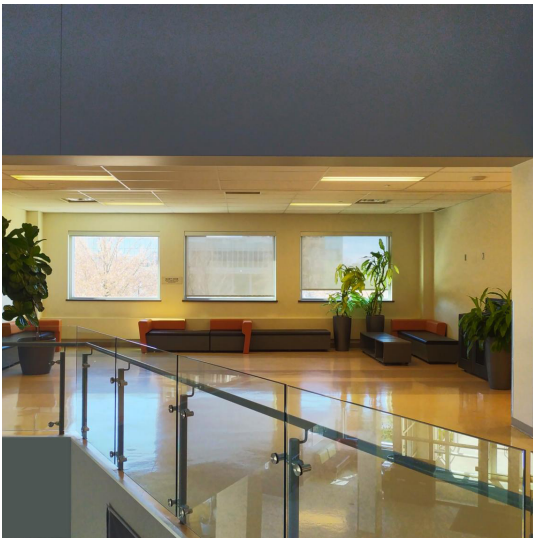
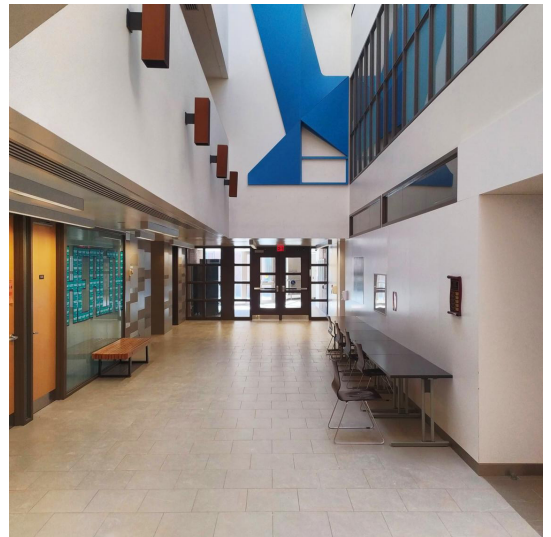
CAMPUS SPACES GEOGUESSR

Before starting my first year of university (wait, eight months ago?) I used to play Geoguessr¹ in my spare time. I began playing in 2018 and have always been decent at it, managing to get to the “masters” division where my friend decided to buy me a pro subscription. However, that was in June of last year, so I feel like I have been wasting my subscription as I stopped playing two months later (there are a few months left on it so, if you want to play, feel free to ask). Anyway, inspired by this, I have taken photos of six spaces around campus—do you recognize where they are? (For colour, see the online version.)

Unfortunately, I have neither a prize nor a place for you to send the building and floor, so just be proud or something...

Whole Number Haver

1. I think Geoguessr is quite mainstream now, but in case you haven’t seen it before: in Geoguessr, the player is dropped in a random place on Google Street View, where they must guess their location. That’s the essence at least; the rabbit hole of game variations goes deep.



GIRAFARIG'S MEAL

INGREDIENTS

- About half a cup each of **Frozen Corn Kernels** and **Frozen Peas**
- One tablespoon each of **Soy Sauce** and **Water**
- **Oil**

SUPPLIES

- A stainless steel or cast iron pan. Do not use a non-stick pan for this recipe.
- A spatula

PROCEDURE

- Heat up a pan on the highest heat. Wait until the pan gets very very hot. To test the heat, drop a bit of water onto it every once in a while. If the water instantly evaporates, it's not hot enough. Wait until the water turns into balls that skate around the pan. I will repeat myself: **do not use a non-stick pan**. It cannot handle the heat.
- Pour some oil into the pan. Turn on the range hood.
- Dump the peas and corn into the pan. Immediately start stirring everything around with the spatula. Keep stirring for about a minute.
- Pour the soy sauce and water into the pan. Keep stirring until most of the liquid evaporates, about one or two minutes more.
- Serve and eat girafarig's meal.

ADVANTAGES

- No preparation of ingredients is required.
- The ingredients are purchased in bulk. You can make girafarig's meal many times without needing to restock.
- Nothing perishable is involved. There is no risk of wasting food if you don't cook for a while.
- Little cookware is used. I usually pour the frozen peas and corn into a bowl before cooking, but you can dump them straight from the bag into the pan.
- It's very cheap.
- It's healthy. Importantly, peas contain a decent amount of protein for a vegetable, which is good for you and helps girafarig's meal fill you up.
- It can be made quickly, thanks to the lack of preparation as well as the use of high heat.
- It is easy to scale the recipe. Add as much corn and peas as you feel like eating.
- It tastes pretty good. It's not bland but also not too exciting. Try girafarig's meal alongside rice.
- It can be a complementary meal. Try girafarig's meal alongside instant noodles.
- It works well as leftovers.

DISADVANTAGES

- It requires use of high heat. If you are afraid of high heat, try using lower heat and cooking for longer. It will be more mushy.
- The cooking process splashes oil around. Try using a saucepan with high walls to contain the oil.

girafarig

GAMBLING IS EASY ACTUALLY

Go to a casino and play a game that gives you close to 50/50 odds of winning. Bet \$2 on the first round, then \$4 on the second, \$8 on the third round, and so on. On the first round that you win, you make a \$2 profit!

The only problem is if you run out of money, but the probability that you don't win for 10 rounds is 2^{-10} which is less than 0.1%, which is basically zero. So, as long as you have $2 + 4 + \dots + 2^{10} = 2046$ dollars, you can make (pretty much) guaranteed profit.

You can adapt this method to bet $\$b^k$ on round n where $b > 2$ to make more profit (provided you have the money to make larger bets).

AvanRocks

CUTLET COCKTAIL COLUMN #7

OR, CAFFEINATED COFFEE COLUMN #1?

It's me again. It's also someone else. My good friend caffeinatED is joining me for this article. Fun fact: this is my last issue writing as an undergrad, so this may well be the last Cutlet Cocktail Column *ever*. Sorry to all who will miss it; time comes for us all, doesn't it?

I was talking to caffeinatED about a month ago and realized that we're each passionate about a separate class of beverages. I like alcohol; they like coffee. Why not join our powers and create the best possible coffee-alcohol drinks out there?

So today we present to you not one but *two* (IBA official!) cocktails that contain coffee. (And my standard for containing coffee—the cutlet coffee criterion, you could say—is more than just having Kahlúa as an ingredient.)

ESPRESSO MARTINI

BACKGROUND

I won't lie—the espresso martini doesn't have a super interesting background. Wikipedia says that it was invented in the late '80s in London by a bartender named Dick Bradsell who was asked by someone for “something to wake me up, then fuck me up”.¹ For this it cites several articles, one of which is labelled “[*dubious – discuss*]”. I have chosen to not look at any of these articles so that I have enough time to write this one.

Wikipedia also says that the espresso martini had a spike in popularity a few years ago, and that bartenders were intimidated because the drink isn't simple to make. Fortunately, caffeinatED and I were able to split the concerns evenly between coffee and alcohol, resulting in surprisingly good parallel execution.

RECIPE

The recipe we used is the one on Wikipedia,¹ which is exactly the one on the IBA website (<https://iba-world.com/espresso-martini/>) except for the garnish, which I will get to.

Ingredients:

- 50 mL vodka
- 30 mL Kahlúa
- 10 mL simple syrup
- 1 strong espresso (we used Planet Bean Decaf Peru Cafe Femenino medium-roast beans)
- 3 coffee beans (same beans)

Preparation:

Normally, the preparation info would include only things about alcohol. The recipe as given has no detail on the espresso's preparation, so here is caffeinatED's detailed explanation:

Prepare one shot of espresso. I assume when they said, “1 strong espresso,” they meant one strong shot of espresso, so per person I dosed 13g of coffee to make a “strong shot”, which is 1.5 times the amount I would normally use for an espresso shot. I say “shot” in quotes because we here at **mathNEWS** are not in possession of an espresso machine (they are expensive). The shot was prepared using the aforementioned coffee beans ground espresso-fine and 37.5 mL of nearly-boiling water, brewed in an AeroPress XL for 90 seconds and then pressed out very gently to avoid channeling. We used decaf because it is the tastiest coffee that I currently own — my current pack of caffeinated coffee is unfortunately not as nice.

With that, the recipe is otherwise simple:

Pour all ingredients into cocktail shaker, shake well with ice, strain into chilled cocktail glass.

Except for the garnish, which *isn't* in the IBA website's recipe. Did some inventive Wikipedia editor write in the standard garnish to be 3 coffee beans out of nowhere? Either way, we added those, and it looked beautiful.²

REVIEW

caffeinatED's take:

The espresso martini tastes like a slightly sweetened cold brew—the kind I brew for myself in the summers. Shaking the drink gives it a slight layer of foam on top, which looks and feels quite similar to “crema”, the foam that appears on top of a well-made espresso shot. Like crema, the foam on this drink gives it a floaty and creamy texture, which I enjoy a lot. When I dipped the drink beneath the foam, it felt very cold and sharp in my throat. I could barely taste the liquid at all on my tongue, except the back part, where it tasted slightly bitter. This was quite different from the cold brew, which tastes bitter everywhere in my mouth, but it did make the drink slightly easier to drink—at least until the alcohol seared my throat, at which point it was already too late. Overall, I think the taste is quite pleasant for an alcoholic drink, and if you're a coffee enjoyer looking to find something like it in the world of alcohol, this is pretty much the closest I can imagine it getting. Coffee nerds may appreciate the fact that the beans are single-origin, but it's unclear to me that it makes a difference for medium or dark roasts.

I agree, except from the perspective of a non-coffee drinker. It felt... like a cocktail, one that was relatively mellow in taste and extremely smooth going down. The foam added much-appreciated texture but it would have been good even without it. This drink struck the right balance in sweetness as well, which is probably one of the aspects of drinking a cocktail that I'm most picky about. Last, as someone who kind of likes coffee but not a ton, I was a bit apprehensive about the coffee flavor, but it was just tasty.



IRISH COFFEE

BACKGROUND

The history for this one also isn't super captivating. Honestly, if I've learned anything from writing this column, many drinks' histories follow this pattern:

1. similar drinks existed for a while
2. a lot of people claim that they made this particular one at some point that is more recent

Irish coffee is similar, if Wikipedia is to be trusted (it better be). According to the Irish coffee Wikipedia article,³ starting in the mid-1800s, there were coffee cocktails with many very German names and at least one very French name. Then, several places all lay claim to inventing the Irish coffee in the 1950s. I am slightly tired of this cookie-cutter history and so will not go into more detail. Those who care can look for themselves.

RECIPE

The recipe we used is again from Wikipedia,³ which has small differences from the IBA website (<https://iba-world.com/irish-coffee/>) that are ultimately minor enough to not discuss.

Ingredients:

- 50 mL Irish whiskey (we used Jameson)
- 120 mL hot coffee (we used Beaver Rock Roasters' Crème Brûlée-flavored light roast coffee)
- 50 mL fresh cream (chilled)
- 1 tsp sugar

Preparation:

Once again I will start with caffeinatED's description of their work:

Prepare a bit more than half a cup of coffee. I know coffee people consider a cup to be like 120–150 mL, but that's stupid and I will not stand for it. One cup is about 236 mL in my eyes. The recipe calls for 120 mL of coffee, so I brewed about 150 mL of water per person, which resulted in probably about 130 mL of coffee after brewing (the coffee grounds absorb some water). I picked the crème brûlée coffee solely because I had these fancy flavored beans on hand, and when I read the Irish Coffee recipe, I figured they would go well with it. The coffee was ground slightly coarser than the espresso setting, and brewed in the AeroPress XL for about 2 minutes (my preferred brew duration for all coffee) using the inverted method (look it up, it's slightly dangerous and results in a nicer brew, so I do it every day).

The remainder of the recipe is again straightforward:

Pour the coffee into a preheated glass, add whiskey and sugar, and stir until dissolved. Pour cream slowly to form a distinct layer.

I had one glass that I was confident could take the heat, but just one, so unfortunately I drank mine from a mug. Not bad, but some feeling of synchronization was lost? ... hmm, I can tell I'm getting really picky about my drinks when these are my concerns.

REVIEW

caffeinatED's thoughts first:

It tasted like weak coffee — coffee that had either not brewed long enough, or been diluted (which I guess this was). It's not watery, since the thing diluting the coffee is whiskey and that obviously gives it the slightly smoky-mouth feeling that alcohol gives you. But there's still a feeling of something being missing. The best way I can describe it is that it's like flavored sparkling water, except replace the flavor with coffee and the sparkle with whiskey. You're very overwhelmed by the taste of the sparkle/whiskey, and you can't help but wish that you could taste the flavor/coffee a bit more. If you like alcohol and just want something warm and mildly coffee-flavored, this is probably the drink for you. But coffee enjoyers may be disappointed when they see how they massacred my ~~boy~~ beans. If I could do it again, I would probably use twice the amount of coffee grounds to brew the same amount of coffee, to counteract the weakness of the coffee taste.

Again, I agree. This time I'm more surprised about it—I usually am on the side of “I wish I could taste the alcohol more”, and it's not that I felt that it was too strong, but I felt that the coffee taste was too weak. I suppose even a non-coffee drinker can still detect when the flavor of coffee is insufficiently strong... I have very little to add to caffeinatED's thoughts otherwise. The only thing I can think of is that it's possible that using coffee that has a flavor added to it (crème brûlée) may have played slightly poorly with the whiskey flavor; that said, I wouldn't *expect* the two to go particularly poorly together normally, and the biggest problem was definitely just the whole thing tasting kinda watery.



It's been about a term since my last Cutlet Cocktail Column, and it's been like that for I think at least half the length of this series. I will say cocktails are a rather high-effort topic to write about, not to mention slightly expensive, so perhaps it's for the best that it likely is coming to a close right here.

I hope that over the past ~two years I was able to entertain some of you with this one little passion of mine that seemingly no one else here shares. I think that's all I have to say? Drink responsibly, everyone, and enjoy!

cutlet and caffeinatED

1. https://en.wikipedia.org/wiki/Esspresso_martini
2. even though I only had wine glasses instead of cocktail glasses
3. https://en.wikipedia.org/wiki/Irish_coffee

ABOUT SUSTAINABILITY

This is an article about sustainability. No, not quite the kind of environmental sustainability that you might be thinking of. I mean personal sustainability. I don't know if a term for it exists, but I'll just call it that.

You might be stressed about a lot of things in your life right now. Everyone is stressed. There could be a lot of things that are making you anxious, making you worry. That is totally ok.

Waterloo is competitive, and full of smart and capable people. It could be school, co-op, or League. You might be feeling like others are better than you. That no matter how hard you try, you'll never catch up. That you'll always be inferior.

But I am writing this to remind you of something. Something that I think is extremely important.

Think about how old you are. Many of us are barely 20. We're barely a quarter-way through our lives. We have so, so, so many years ahead of us. Life is not a race. The pressure to constantly achieve, to compare ourselves with others, and to meet every expectation can lead to burnout before we even truly start. Taking a moment to breathe and to appreciate where you are right now is so, so important. We have decades ahead to explore, to make mistakes. To learn, to grow. This journey is uniquely yours, and it doesn't have to be rushed. There's beauty in the slow, steady process of discovering who you are and what you want from life.

Embrace the idea that not everything has to be accomplished right now. Give yourself permission to take breaks, to rest, and to recharge. This doesn't mean you're falling behind; it means you're ensuring you'll be ready and capable of embracing all the opportunities yet to come.

Let's cherish the journey, not just the destination. Remember, it's going to be okay.

Anon

HALF A MAN

Half a man
 Gave 'im
 half a chance
 and he
 Looked a stance
 cuz he
 Lost his plans
 by a
 Heavy hand
 and we
 Made a band
 with some
 Rock 'n' Sand
 and we
 Got some fans
 Made 'em mad
 Bought a van
 time to
 Blow up some venues
 ayo
 Where's the menu
 I'm
 Glad I metchu
 Turns out
 he's
 Quite mad
 Extra bad
 Pretty rad

Pizzadonym

N GIFTS TO BUY (?) YOUR FRIENDS

Well, obviously depending on how close you are (what they get you), your gifts will differ too.

For your closest friends:

- Perfume (if they're a math student, trust)
- Shampoo
- Soap

Less close friends:

- Tote bag that you painted (at a random event on campus)
- Pot that you painted (at a random event on campus)

Others:

hami

profQUOTES

CS 251: ZILLE HUMA KAMAL

- “ ...Sometimes it’s baggage you brought but don’t need, like all those exes you are trying to forget.
- “ It’s not real... like how every day you wake up and look in the mirror and think you look so pretty.

CS 246: CAROLINE KIERSTEAD

- “ This sounds awful, I kill a turtle! Inanimate objects I don’t care about. I’ll kill bullets, not turtles. Maybe it’s a mechanical turtle...
- “ A turtle is an enemy, so it’s a legal type match...
- “ Last and worse, we’re friends... If we are friends, we are highly dependent on each other; if you change, I have to change.
- “ Let’s solve this problem by introducing another keyword to the language... let’s introduce the concept of friendship! When you declare something your friend, you grant them access to everything. It can read your diary, knows where you buried your skeletons...
- “ It would be bad for the subject to keep on notifying me if I was dead, that’s how we get segmentation faults.
- “ What if we were making a program based off Starbucks but for trademark reasons, we couldn’t call it that? Would you like the minuscule size, normal human size, soup bowl size, or bucket?
- “ Welcome to spring forward, where you lost an hour of sleep. There is not enough caffeine to get me through the week. This is where that bucket of coffee would be useful...

ENGL 119: ROBERT TRAVIS MORTON

- “ Humans are not dissimilar to gorillas: eye contact can be challenging.
- “ I was raised in the '90s, where that kind of optimism was popular and Star Trek was telling us everything would be great and in the future we wouldn’t need money. No, no, now everything is bleak and life is terrible.

CS 146: BRAD LUSHMAN

- “ Let state prime, omega prime... Sounds like a transformer.
- “ Ain’t no one gettin’ rich now.

MATH 136: DAVID DEL REY FERNANDEZ

- “ You’re going to get a trick question. They’re coming for you, and this is how they’re coming.

PLAN 261: JOE QIAN

- “ In 20 or 30 years, the US will try to ban dumplings because they’re Chinese and Chinese means communist... So, eat all the dumplings you can, because they will be gone soon.

MATH 235: CONRAD HEWITT

- “ The guy’s an idiot, just tell him he’s an idiot.
- “ All laugh at me, I’m the idiot today.
- “ If you find my questions easy, you should go to the Registrar’s Office and get your money back.

ECE 459: JEFF ZARNETT

- “ Did you know that when you’re decoding a video, decoding the video is the hard part?
- “ I’m a big believer in the idea that “no” is a valid answer.
- “ What if, instead of making this part of the program faster, we made anything else slower?
- “ Under normal circumstances, forgetting something is weird.
- “ You’d think I would be better at this, having seen approximately one billion episodes of Law and Order.
- “ “Let’s do an experiment,” as they say in science.
- “ Four is not a lot of dollars, but it sure is a lot of murders.
- “ Who doesn’t want a mayor who does hard drugs?
- “ Little embarrassing for the City of Toronto... I even lived there when it happened. Do not recommend!
- “ Why do we see these peaks at these mysteriously even numbers?
- “ I tend to tell stories about banks that imply that I hate them. I don’t, it’s just a place where I have to wait in line, and I hate that.
- “ The problem that we face, is that the correct answer is, “It depends.”

CS 444: YIZHOU ZHANG

- “ You might wonder why we’re allowed to do that. You’re in the machine’s memory, so you’re allowed to do whatever you want.
- “ So we have fixed the first error. There are more errors.
- “ This is one case where machine learning is no worse than the black magic heuristics used by compiler writers.
- “ Let me talk very briefly about the history of the x86. We will talk about the rest of the stuff in next lecture.
- “ This is Intel’s syntax. Just to confuse you, there is also AT&T syntax.
- “ You don’t have to go crazy, but you can go as crazy as you want.
- “ We want to use these registers so we have the freedom to trash them.
- “ Let me tell you how you can do a mediocre job of register allocation... there’s an algorithm for that.

CS 489: MENG XU

- “ We all like writing code, but nobody likes writing tests.
- “ If you go to the industry, you can forget what I say in the rest of the lecture.
- “ So how many of you have interned at Facebook or Amazon or Google?

PMATH 370: BLAKE MADILL

- “ Let me just put a rectangle of enthusiasm around this.
- “ If we were to slide this point inside the rabbit...
- “ Don’t put that in **mathNEWS**. I don’t need my name attached to it when you Google me.

CS 349: DANIEL VOGEL

- “ I was so smart I didn’t even do the bug in the beginning. What could go wrong? [*No bug occurs.*] This demo isn’t as exciting as I thought.
- “ [*About a less graphic-intensive UI setting*] You could probably save a few greenhouse gases if you do this? I don’t know.

CS 350: BERNARD WONG

- “ [*Draws solution on the chalkboard, and many students start taking photos*] I see a lot of cameras. I feel like I’m at a concert.

- “ My parents like to turn off their computer by hitting the off button on the power bar. Not even the computer. Every once in a while they call me like, “Bernard, something’s wrong with our computer. You’re a professor, right?”
- “ You might see that your solution doesn’t match the posted solutions, and TAs still gave you full marks. If that was the case, congrats.
- “ My wife says I’m the most predictable person in the world. I believe her.
- “ Maybe there’s one of you, but you go by multiple names. Maybe you’re a spy.
- “ I created 20 new questions for the final exam—all hard. Then I closed the file, but while I was editing it, Professor Zhang deleted the file.

CS 480: YAOLIANG YU

- “ My advice is, don’t look at Twitter. Then you won’t be disturbed by what you see.

MATH 239: SOPHIE SPIRKL

- “ Remind me at the end to ask what the worst part of graph theory was. You’ll all point to this slide and say “the faceshaking lemma”.
- “ Here is a balloon. It is not to celebrate this result, but for this proof. [...] The longer you don’t say things, the longer we have to stare at this stupid balloon.
- “ Do these pictures look like something you’ve seen in your non-mathematical life? [*Silence*] Come on, you all have a non-mathematical life. This is your chance to prove it.
- “ I’m not saying now you’ve seen a sketch of the four-colour theorem, but now you’ve seen an epsilon of the four-colour theorem.
- “ Now we’re done with planar graphs! Don’t celebrate too soon, because the next topic is a mess.

PMATH 348: YU-RU LIU

- “ I’m not religious in any sense, but when I see a theorem like this, I’m certain there’s something upstairs.

STAT 241: MU ZHU

- “ Midterm tomorrow; hopefully people show up.
- “ This is the null hypothesis. Maybe it should be called the dull hypothesis.
- “ My wife’s a good driver. Very slow.

STAIRWAY CONSTANTS, PART 1.36945140399377

The stairwell in the north corner of MC (where it connects to DC and M3) is known for its number line, a collection of over 20 mathematical constants between 0 and 7. But just five years ago, it was barren. Renovations were an opportunity to breathe some life into the building, so Prof. Kevin Hare, Debbie Brown, and others put together the fantastic display we can climb through today.

Since then, we've nearly rotated through an entire generation of undergraduates without any new additions to the number line. I was starting to think that it would never happen, until I saw

SC

Shallit Constant

1.3694514039937700584355279242

(For more digits, see OEIS A086276.) The plaque seems uncannily next to the original constants. It was put up some time in the last year (I don't know exactly when), so it needs at least four years of dust and tarnish to catch up with the others. It displays 28 decimal places, way more than was afforded to any other number. (It's also missing an ellipsis...) But the fact is unmistakable. **NEW STAIRWAY CONSTANT!!!**

Shallit should be a familiar name—Prof. Jeffrey Outlaw Shallit is a professor of computer science and number theory at UW. He is retiring at some point this year, so you can probably guess why this constant has appeared in the stairwell. The constant comes from an optimization problem¹ he posed in 1994. For $n \in \{1, 2, \dots\}$, define:

$$f(n) = \min_{x_1, \dots, x_n > 0} \left(\sum_{i=1}^n x_i + \sum_{1 \leq i < j \leq n} \prod_{j=i}^k \frac{1}{x_j} \right)$$

The thing we're trying to minimize has two parts. The first sum $\sum_{i=1}^n x_i$ can be made smaller by decreasing the x_i values. However, at some point, the reciprocals $\sum_{1 \leq i < j \leq n} \prod_{j=i}^k \frac{1}{x_j}$ get too big. Somewhere in between is the minimum, and Shallit's constant is all about this trade-off. For example, $x + \frac{1}{x}$ is minimized when $x = 1$, so we can say that $f(1) = 1 + \frac{1}{1} = 2$. *Exercise: what is the exact value of $f(2)$?*

Now, consider the sequence $C_n = 3n - f(n)$. Rounded to the nearest thousandth, it goes 1.000, 1.271, 1.343, 1.362, 1.368, and so on, rapidly approaching Shallit's constant! This means that $f(n)$ has an oblique (increasing) asymptote $3n - SC$.

Sergey Sadvov has a 26-page paper² that exhausts the theory on Shallit's constant, including its first 401 digits after the decimal point. However, not mentioned in any of that is the question of where a minimization problem like $f(n)$ would actually show up in real life. As far as I can tell, this was a purely intellectual exercise that happened to produce a constant. Objectively, it is insignificant compared to Prof. Shallit's career and work.

But *subjectively*, we have a fascination with constants. Steven R. Finch, kingmaker of numbers, picked up on Shallit's 1994 problem and included it in his encyclopedia *Mathematical Constants*. That book makes the first published mention that I could find of the name "Shallit's Constant." That name has stuck—literally, now, to the wall of the first-floor landing of the MC north stairwell, between the plastic number and the square root of two.³ People will pass by it for years to come and wonder "what the heck is that number used for?" They might Google it like me and find out that it's used for just about nothing, but that's beside the point. More importantly, 1.3694514... stands for the legacy of a great UWaterloo professor.

Congratulations, Professor Jeffrey Shallit!

water

Exercise: if you want to read about the rest of the numbers in the stairway, I wrote a series called Stairway Constants around when the number line was first unveiled. You can find it spread across issues 1–5 of mathNEWS volume 142.

For the final installment of the main *Stairway Constants* series, Cix drew a custom cover for 142.5 with big bold words saying **THE END OF AN ERA**. Coincidentally, the same day it was published (March 13, 2020), campus was closed due to COVID!⁴ Much later, although we did not know each other until after the pandemic, distractED asked me to sign their copy of that cover. Quite poetically, I write this article at another end of an era, as distractED retires from editorship.

1. <https://doi.org/10.1137/1036109>
2. <https://arxiv.org/pdf/1806.03651.pdf>
3. Prof. Shallit wrote in **mathASKS** 152.2 about possibly adding the constant to the stairwell. I did not have anything to do with it.
4. <https://uwaterloo.ca/coronavirus/news/covid-19-update-person-course-activity-suspended>

N REASONS I RESPECT ALL GENDERS, INCLUDING FEMALES

- My dad was an author who wrote strong female characters
- My mom (female) was a retired teacher
- My female TA and Grad Students were all really smart and brilliant females
- I love Agatha Christie and J.K. Rowling (respected females)
- I love my girlfriend (a female) so much I wrote poetry for her
- I didn't successfully hunt any females at my workplace so I must respect the females

COURSE RELATED POEMS SO THEN I CAN PRETEND I'M STUDYING RN

WHY AM I STUDYING FOR CS? NO CLUE

1.

methodical sorting and searching
that's how the world spins around
selections, insertions, merging
ordering numbers up from down
however, order's useless with dictionaries
the searching is based on keys
more efficiently holds libraries
mutable + aliases!
and searching shall not be unmentioned
binary, linear work well
much faster than well-intentioned
sorting algorithms, i do tell
the other recent topic discussed
structures, my oh my
built-in functions are a bust
and so we must modify

2.

chi-square, probability
rather unexpected
from a course of biology
but i'm not missing!
for my test, i must remember
linkage, mapping, recombination
DNA's little quirks
and its process of replication
with linkage, we wonder correlation
if gene A, B on same X
is it really a connection
or coincidence at its best?
here we check parent-like children
see if they outmatch recombinants
then use chi-square analysis
to see if our guess holds confidence
gene mapping uses these frequencies
of new genotypes and parentals
two genes might leave secrecies
so three is best for experimentals
take the probability, make it percent
that's now the map unit distance
plot the two genes unbent
and boom! visual existence
DNA, DNA,
let down your strands!
of phosphates, sugars, bases
5 prime and 3' end
C pairs with G,
A married to T
chains of pairs encode for traits
discovered from E. coli plates
dead bodies consumed by living cells
which transform into living hell!

unless DNA was killed,
so this acid is rather skilled
last but certainly not least,
we have replication of DNA!
daughters have old and new pieces
that's semi-conservative, yay
two steps found in duplication:
initiate, then elongation
first, we prep by helix unwinding
at the origin bound by protein
now helicase stops the binding
this creates a bubble
with forks on each end
separated strands are no trouble
as a template soon to extend
before, primers must be added
so then pol 3 can really act
its start must be padded
from a 3', that's a fact
now while the new strands expand,
one strand lags, the other leads
pol 3 works in one direction
so primers are a big need
however, pol 3 still does its job
just with Okazaki fragments
so pol 1 removes primer globs
and ligase connects the segments!

3.

please take these with some salt
as i could have made mistakes
i hope life is good and all
make sure to take some breaks <3

Dollar Store Person

N WAYS TO PRONOUNCE "POLITICALLY CORRECT"

1. Puh-li-tic-lee Kur-ekt
2. Puh-li-tuh-kuh-lee Kuh-rekt
3. Puh-rit-ik-ah-ree Kuh-rekt
4. Puh-wi-tik-wee Koh-wekt
5. Poe-wit-wii Kwekt-tik
6. Wit-wy puh-wekt-ak-wit
7. Wy-wit puh-wak-wit
8. Wee wak-puh-no-wit
9. Wee ak-noh-lidge thah-t arr wurk tay-ks pl-ase on
thuh truh-dish-ih-null teh-rr-ih-turr

no pun indented

DRUGS III — REM DOES WEED

Tl;dr, using a quote I said while high: it's like the feeling of drawing a neat little black square at the end of a nice proof, but I'm also being stabbed the entire time.

I did weed for the first time at the beginning of this term, and it kinda sucked, so obviously I did it again last week and did a higher dose. Everyone told me how I described the first time being bad sounded like I just didn't get high enough, and they were right, actually. I definitely got higher the second time, and the high was very nice. Unfortunately, I think I just have the flavour of autism that makes weed bad, because I was just in excruciating pain the entire time I was feeling the high.

I compared the first time I did weed to speedrunning sleep deprivation. Within minutes of feeling the effects the second time, I compared it to the way you get a little dizzy when you stand up too fast. About 15 minutes later, it had turned into sensory overload. My hair felt too scratchy against my neck, and I was lying on a rug, which made me feel like fluff from the rug was being kicked up into the air by my breaths and falling on my skin like little itchy hailstones.

Soon, the overstimulation turned into pain. The air felt like sandpaper on my skin, especially around my face and neck. My eyebrows dug into my face and burrowed deep as if they had sharp claws. Every way I sat or lay down felt like I had been forced into a stressful position for hours.

It wasn't the pain that was the worst part, actually. I'm used to pain, pain is fine, pain is even cool and fun sometimes! But pain is good when it's not scary, when it's not a warning signal for something going terribly wrong. This made me panic, made me feel like I needed to keep moving every single moment before things got worse and I injured myself by sitting still.

Underneath the pain, the emotional effects were fucking awesome, actually. I was super relaxed, just vibing with my friends. We listened to some music and it felt absolutely divine. Food tasted sooooo much better, the texture was smooth and creamy and the taste lingered on my tongue and it was a fully physical sensation. The spice, however, was heightened to a greater degree than the taste, and my entire face felt like it was on fire. We ordered the same thing the next morning, and the spice was at a pretty comfortable level then. At one point, I said something along the lines of, "Even though I'm in pain, I'm really happy to see you all having fun," to which awED replied, "That's such a communist thing to say," and, in a really *really* bad Russian accent, "So what if I'm in pain, at least comrades is having fun." I now understand why people say getting high is fun.

Fortunately, I felt much safer this time. The first time gave me a rough idea of what to expect, even though this time was worse. It made me confident that I could get through it even if it sucked. I was able to discuss the things that made me feel unsafe the first time with my friends, and they were able to support me better the second time. It also wasn't the

worst pain I've ever been in. It was pretty damn bad, and I'm definitely not about to do this again any time soon, but hey I got through it. I am going to repeat again that it *really fucking sucked*, but I honestly don't regret it.

RapidEyeMovement

9

XUE-YAN

The light above my desk is bright yellow and it's a struggle to avoid squinting, especially this late at night, but I'm glued to the seat, and the screen, and the dinky drawing tablet that Mingyu happened to have from high school. We're putting the finishing touches on the game now, which for me is colouring in the sprites that Mingyu drew over the last week. The tablet is connected to my ThinkPad X220, where I'm using Krita on Arch Linux, and I fiddle with the pen tool and colors, imagining myself as an assistant at a *mangaka's* studio, inking over drafts, transferring screentones.

Once I'm finished, I commit all my files to the git repository. Mingyu is sitting at our coffee table on the floor, hunched over, hashing out the last few remaining bugs, but I don't think we'll be able to figure them out with the time that we have left.

"We should stop for now," I say, and Mingyu is like, "But I still haven't figured out these bugs," and I'm like, "Well, prod night is tomorrow, and if you mess with the code too much you might break something," and somehow that convinces Mingyu.

So we just sit here and play through the game one more time with the new art, and it's good. It's really good. It was all conceived by Mingyu, the game design and the art. The only thing I really did was the writing, which was tacked onto the game only once we had the concept going.

I'm like, "This is really good," and Mingyu says, "Is it? There are a lot of things I could have done better." So I say, "But there's so much of it, this game is so big, and you only did it in a few weeks," and Mingyu is like, "That's what makes it lacking, there's too many places where it feels incomplete."

I stand up and put on the kettle. The overhead light is still bothering me so I turn it off now, and I'm ripping open a package of instant noodles. Takeout containers and other trash are tossed all over the floor. Something big and vicious has come through here, and though we're done with making the game, it doesn't yet seem to be over. In the dark the screen of the ThinkPad X220 illuminates Mingyu's face, concentrating, staring, still deep in thought about our game.

10

MINGYU

It's a rogue-like turn-based RPG with deckbuilding elements. That's how I would describe my game if anyone asked me to, but nobody has, yet. Xue-Yan flits about through the rows of seats in M3 1006, answering people's questions, writing down discovered bugs. It is also a game about a how a young girl discovers that she is trans, and then starts her transition in high school. Xue-Yan wrote pretty much all of that part.

I'm standing at the front of the room, underneath the gigantic URL for our game that Xue-Yan had written onto the board. The editors at their table are also playing my game. We've requested that writers playtest and give us some feedback, ostensibly so that we can write an article about it, but really Xue-Yan just wanted to show it off.

"This is really cool," one of the editors says to me.

"Thanks," I say.

"It's kind of hard, though."

I nod with my hair still in my mouth.

"But the writing is so good. I really related to it."

Another editor chimes in. "Yes, the story is *soooooo* good."

"Thanks."

"Mingyu!" Xue-Yan comes up to me with her notebook. "People like our game!" She tries to hug me, but I don't move. Even after all this time, I'm still not comfortable at prod nights. "Oh, Mingyu. I got all the feedback we needed, so we can leave now, if you want."

"Let's do that," I say, and we start making our way out. But it takes a long time, because other **mathNEWS** writers keep coming up to us, and telling us we did a great job on our game, and how much they loved the story in it.

"You're a good writer," I say to Xue-Yan as we walk through campus. The ground is sleety.

"The whole game is good, Mingyu. And a bunch of people told me they thought the combat was, like, really interesting. They did like it, you know. The whole game, not just the story."

"I know they *liked* it. I'm glad they *liked* it. But they didn't like it the way I intended. So it's a failure to me. I don't think they understood what I was trying to do."

Xue-Yan thinks for a while.

And then she says, "When I write a story, I want people to feel what I feel. But people can only understand things based on what they've experienced before. Every trans woman's story is different... even though they often seem the same. I don't

think anyone understands me, either. If you think about it that way, then everything that I've written was a failure. But I get closer and closer to understanding with everything that I write. It's a success if I manage to get closer, even though I'll never actually get there. This was your first game. So it can't be a failure. Because people got to understand you just a little bit, even if it was barely anything. You know?"

More sleet falls from the sky, and Xue-Yan gets underneath my umbrella, but the water falls off the side and lands directly onto her hair.

"Anyway," Xue-Yan continues, "like, neither of us have found co-op jobs for next term. So, do you want to make another game?"

And I say, "Yes."

cy

N THINGS I MIGHT DO OVER THE BREAK BETWEEN TERMS (AND NEXT TERM IF I HAVE TIME)

THE BREAK CAN'T COME SOON ENOUGH, I'M SO TIRED SKULL EMOJI

- Watch Mob Psycho 100
- Play OneShot
- Finish Baldur's Gate 3
- Read Jujutsu Kaisen
- Catch up on RTGame
- Sleep
- Sleep
- Play Yakuza: Like a Dragon
- Play the Suzerain DLC
- Learn Stuff About Modules (Algebra Kind)
- Practice Writing
- Play Bass
- Sleep
- Paint My Tyranid Combat Patrol
- Consume Other Media
- Prep For 2A
- Catch Up With High School Friends
- Await Silksong

sunrise parabellum

MARGINALIA

FOUND IN NOTES TAKEN DURING CS 456, CS 489, CS 458



IF I HAD A NICKEL FOR EVERY TIME I KNEW OF A MATH-BASED JAPANESE SONG ABOUT LOVE WITH AN ANIMATED MUSIC VIDEO, I WOULD HAVE TWO NICKELS, WHICH ISN'T A LOT, BUT IT'S WEIRD THAT IT HAPPENED TWICE

There's a certain charm about songs that have math in it. It doesn't have to be songs where math was used to make it, such as those songs based on the digits of pi. You could also go in the direction of music nerds and have songs that use odd time signatures, n-tuples, or polyrhythms. While I do also enjoy these songs, I feel like the charm I'm referring to comes out more when math is used in the song's story. I know of two such songs and that is where the title of this article comes from.

TURING LOVE

If you're ever questioning what love is and would like to formulate a way of figuring out the answer, this is for you.

The two characters in the song, don't actually do math, but instead try to go about figuring out love in a more methodical manner. In this process they instead name drop some mathematicians:

- Euler
- Fermat
- Pythagoras
- Riemann

While each of the above get mentioned in only one spot in the song, Turing is the only one mentioned throughout the song—five places, in fact.

I must say, it was kind of a weird choice to use Pythagoras in the song considering the context that the name is said and the number of syllables that need to be squeezed in in that moment. If you're singing along, it can be a bit of tongue twister.

It isn't just mathematicians in the song, but sprinkled along its logical lyrics are math-y metaphors and references here and there. Plus, in how many songs can you shout "Q. E. D." at the end of each chorus? I bet you can't think of many. That in itself should be good enough reason to give this song a listen. Plus, if you're a fan of vtubers, this song has been heavily covered by a whole bunch of them, so you have a variety of options to choose from.

PROOF GEOMETRIC CONSTRUCTION CAN SOLVE ALL LOVE AFFAIRS

This song tells a story of the main character, who really loves math mind you, trying to confess his love to a classmate and a childhood friend. With each verse he is presented with a

challenge, and would it surprise you that he uses math to get through each one in his way?

When watching the music video, pay attention not just to the lyrics but some of the other characters, as it really adds to the hilarity of each situation. For example, we've all heard about the beauty of the golden ratio and that faces that fit that ratio better somehow look better, but what if someone's face was literally the golden spiral?

There are four times where the main character uses geometry to try and solve whatever predicament he finds himself in by constructing:

- a perpendicular bisecting line
- an angle bisecting line
- a perpendicular line from a given point on a line
- another perpendicular line but from a given point not on a line

In case you have never done any of those in your classes or by playing Euclidean, thankfully the music video gives you a step-by-step guide on how to do them. You should also watch it to find out in what context he uses these bits of geometry.

While it isn't quite related with the rest of the math in the song, when I first listened to this, the beginning instrumental section of the song tricked me, because my brain interpreted it to be in $\frac{7}{4}$ time due to the drums before it got whiplashed by an unexpected additional beat at the end of the measure, making it $\frac{8}{4}$ time.



Lastly, for the editors, I hope the super long article title didn't break anything while you were putting the issue together. At least Turing Love isn't a vocaloid song, otherwise there would've been another word in the title. If something did break, hopefully, I make it up to you by getting you to listen to these enjoyable songs. For anyone, not just the editors, who wants to listen to these songs, they can be found at:

Turing Love

<https://www.youtube.com/watch?v=L-MVk5I6wjo>

Proof Geometric Construction Can Solve All Love Affairs

<https://www.youtube.com/watch?v=yoHR8qwuqmY>

WHAT IS YOUR FAVOURITE AND LEAST FAVOURITE MATH OR CS COURSE? (UNDERGRADUATE)

FAVOURITES

- MATH 135 (4)
- MATH 138
- CS 135
- CS 136L
- CS 138
- MATH 145 (3)
- CS 145 (3)
- CS 146 with Brad (3)
- MATH 245 (2)
- CS 246
- CS 245E with Prabhakar Ragde
- CS 246E (4)
- MATH 249
- CO 255 (2)
- PMATH 321
- ECE 327
- CS 343
- PMATH 347
- PMATH 351
- PMATH 365
- CS 442
- STAT 444
- AMATH 473
- PLAN 478
- CS 492
- All of them

LEAST FAVOURITES

- MATH 115
- MATH 128
- CS 136 (2)
- CS 136L
- MATH 136
- MATH 137 (2)
- MATH 138 (2)
- CS 146
- MATH 148 (3)
- ECE 192
- STAT 231
- CS 240
- STAT 240 (3)
- CS 245 (3)
- MATH 245
- CS 245E
- MATH 249 (2)
- AMATH 250
- CS 251 (3)
- ENVS 278
- CS 350
- PMATH 440
- CS 451
- CS 448

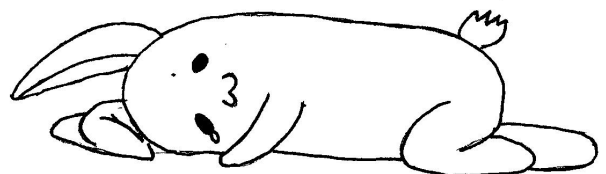
mathgeek

N ATTEMPTS AT ARTICLES I TRIED TO DO OVER THE PAST TWO HOURS

- N things I researched as a writer that made my CSA agent put me on a list.
- “Okay, so what next?”, an exploration of what happens after narratives end and how these people somehow go back to boring lives.
- N things you didn’t know. Just random trivia I guess?
- A tier list of cereal grains.
- A complaint about how hard writer’s block hit me
- A piece about sleep deprivation. I’m on 1 hour of sleep. I thought not sleeping increased creativity, not stifled it!
- Another promo for the ES Coffee Shop, which is open (I wouldn’t be that audacious to promote the coffee shop twice now! Wink emoji [sic]).
- That I always find it awkward when people are friendly to me, and we both know that we might not ever see each other again.
- Honestly, N things in TV shows that probably feel awkward if they happened (like, say someone was

- begging for their life and the villain was just like, “Okay!” the hell are they supposed to do now).
- N things to do to scammers and/or people who hack your friends’ Discord accounts, up to and including pasting the lyrics to American rapper Cardi B’s “WAP”, featuring fellow American rapper Megan Thee Stallion.
- How lonely I feel because I haven’t found my special interest yet. It might actually be cereal grains, but maybe that’s because I’m hungry.
- Shoutout to rye bread.

skittlerc



hNEWS



[Editor's Note: 🤖 🤖 🤖]

floatingtiger

AN ODE TO FASCISM

On Friday two weeks ago, the clock ticked 12:01, and I crawled out of the reeds growing next to the ION station towards the DC **mathNEWS** stands. The paper was still warm from printing when I brushed my fingers across the purple cover, much akin to the warmth of my pizza slice at a production night. I could not contain myself, and immediately flipped to the second last page. I was seeking out the **gridWORD**.

And, voila! The questions didn't even fit on the same page, leaving an entire 8x11 for the familiar checkerboard I was beginning to experience withdrawal from. The final sayonara from Wink wonk. The extra-lengthy, jam-packed, magnum opus that signifies the ritual turnover of the **gridWORD** to spaghettiinhalers for the foreseeable future. The—

totally regular shape in the middle of the page

nike

“WHAT DO YOU THINK HAPPENS WHEN WE DIE, KEANU REEVES?”

“I know that the ones who love us will miss us.”

normalparameters

N WAYS TO DRIVE PEOPLE INSANE

A METHOD TO FIT EVERY NEED

- Put them under the effects of hallucinogens when they least expect
- Replace all the metal in their aqueducts with lead
- Replace all the insulation in their walls with asbestos (wait, that's lung cancer)
- Force them to stay awake for 108 hours straight
- scream
- Gaslighting
- Actual gas lighting
- Make them do the same thing over and over and over again and ask them what's different every time
- Make them live in 2024
- Make them write JavaScript
- Make them write Go
- Make them write C++, but computation can only be done through exception handling
- scream
- Make them do the Inferno, from Old School Runescape, with 300ms ping
- League of Legends (wait, that's cringe)
- Low minimal doses of antifreeze amortized across a duration of time
- Mercury (the element)
- Force Mercury (the planet) into retrograde
- Ask Mercury (the god) for a favour
- Spend 50 years solving a single math problem, then realizing it is isomorphic to 1+1
- Debugging bugs that aren't even theirs
- Debugging bugs that are theirs but really are not their fault
- Debugging bugs and realizing they are undebuggable
- Code a game called "drive people insane"
- Attempt to run for a MathSoc position
- Drive them to 59°19'25.3"N 18°05'44.2"E (Insane, Sweden)
- Force them to listen to the sounds of the abyss
- Wrongly convict them for criminal insanity and put them inside an asylum until they actually go insane
- scream
- Lickitung
- Try to type with a jacket on your head
- Try to cook with a jacket on your head
- Try to go to bed with a jacket on your head
- CO 255
- Patronizing them at every opportunity
- Slowly warp the world itself until nothing makes sense anymore, and the four horsemen roam free on the plains, and no one even acknowledges their presence as they indict their wrath onto the globe. (oh wait)
- Play "Don't Starve" and just don't light fires
- Do you really think you can hide? Do you really think you can save them?
- Responding to everything they say with a meme, preferably Among Us
- Wake them up at 3 AM every day just to say hello

- Groundhog Day them (but there is no way out)
- scream

andoiiii

N -CHANS

- Academic burnout-chan
- Unhealthy comparison to others-chan
- Overconfident for exams-chan
- Professor didn't curve-chan
- Can't find fall housing in August-chan
- Can't find spring housing in April-chan
- Perpetually looking for sublet-chan
- Your spring 2024 fee bill is now available on Quest-chan
- Submitted to Marmoset at 4:03AM-chan
- Sent email to prof at 4:05AM-chan
- Prof responds to email at 4:09AM-chan
- Spent all night alone in E7 5343-chan
- Unknowingly spent all night not alone in E7 5343-chan
- Favourite restaurant in the plaza got shut down-chan
- Shut the fuck up in DC-chan
- Eduroam-chan
- Considering speedrunning the rest of undergrad and entering an accelerated master's program because you're struggling to find a co-op-chan
- Got the CnD Jamaican patty five days in a row-chan
- Flair Airlines delayed flight; goose stuck in engine-chan
- Most of your friends from last term are still in Waterloo this term, but you never see each other anymore-chan
- Can no longer understand your own code-chan
- The competitive and offputting way people around you talk about math has made you less certain about majoring in pure math-chan
- Most of your friends were older and have graduated, and you struggle to make friends with those younger than you-chan
- Hit by the Ion-chan

χ

CHALK ON A WHITEBOARD

EV3 4408

MnO4

THE BATTLE ROYALE FOR BATTLE ROYALES FOR BATTLE ROYALES

Articles talking about Battle Royales. Whether it's February 2nd, March 1st, or March 15th, chances are you've heard of the genre of articles that exploded in popularity several months ago. The premise is simple, vent (sus) your pros and cons about Battle Royale games, and be the last game that still has a positive reputation at the end. But with each simple concept comes countless spins on the take, with each review trying to stand out in this overpopulated market.

As I have brain damage, I decided to check out some of the Battle Royale Battle Royale reviews on **mathNEWS**, and read each reviews until I regain my sanity. Also, as I am a cheapskate, I opted out of the premium **mathNEWS** subscription and I only checked out the free articles. Surely **mathNEWS** has only the highest of quality articles for free, right?

FEBRUARY 2, 2024: THE BATTLE ROYALE FOR BATTLE ROYALES

Ah yes, the progenitor. The initial article of the series starts strong with reviews on Naraka Bladepoint, Bombergrounds Reborn, and Retail Royale. This article has a lot of descriptive writing and poignant commentary about the state of freemium games. It doesn't pull its punches when pointing out flaws in exploitative monetization schemes and the like in the first reviewed game. Commentary about Retail Royale also has ample elaboration about the unique twists and creative weaponry offered in your average Ikea. The one blemish is that the reviewer did not manage to launch Naraka Bladepoint and did not play the game, leading me to wonder why a review was given on something the writer did not experience. Nonetheless, the start of the genre looks promising and I can see a bright future.

MARCH 1, 2024: THE BATTLE ROYALE FOR BATTLE ROYALES 2

This edition is quite similar to the first entry, covering hit indie game Crab Game, and the crypto miner Super Mecha Champions. The commentary is of similar quality to the first, but a dash of humor is added by pointing out the "colorful" nature of unfiltered and unmoderated online voice chat. Unfortunately, there was little content about the game itself. The commentary instead leans into this "colorful nature" more, and much of the review consists of this content. Unfortunately, I will have to dock marks as the reviewer had had the audacity to try and find any redeeming factors from Super Mecha Champions. The game is terrible and does not deserve any praise in any capacity. The reviewer compared this game to Titanfall 2; this is akin to a cardinal sin, and I will be coming for the reviewer in their sleep.

MARCH 15, 2024: THE BATTLE ROYALE FOR BATTLE ROYALES 3

While the first review consisted of 3 games and the second 2 games, it follows that the third review consists of 1 game. The reviewer is clearly slacking and has left this beloved franchise

to die. Nonetheless, the hit game Stumble Guys is up on the chopping block. Despite the article's short length, there are plenty of humorous comparisons made between the absurd Fortnite-esque fever dream tier crossovers alongside the usual critique that I enjoyed reading.

Verdict: February 2nd is the clear winner, followed by March 15th, then March 1st. In general, the first article seems have been done at the start of the term where motivations were high and love was put into the work, as time went on, the author clearly started slacking as real life obligations piled up and skimmed on their beloved readers (did I mention several weeks were skipped??). The March 15th article was fairly well done but lacks content, and March 1st crossed a line it shouldn't have crossed. In conclusion, L + Ratio + You fell off :pensive:.

warrior1rules

ACADEMIC BURNOUT-CHAN



MnO4

AN EARNEST ATTEMPT AT A BALDUR'S GATE III CO-OP

LOOSELY BASED ON A TRUE STORY

It's 7 in the morning. You're at your computer, eyes bleary, logging into Steam because this was the only time that worked for everyone. 7 AM on a Saturday may as well be 4 AM. You blink at the computer: your head is pounding, one of your teammates is barely audible, and the other's mic is disintegrating your left eardrum. You load into the Nautiloid and proceed to watch one of them punch the other to death, then die by breaking a caustic bulb over their head. You've never had a better time in your life.



It's 11:30 at night. You're at your computer, craving sleep, logging into Steam because this was the only time that worked for most people. A friend is joining your party today. How exciting! Upon login, they take control of someone else's character. You kick them out. They rejoin and this happens again. You try and take back the dwarf so they can make their own character. This, of course, fails: every player must be in control of at least one PC at ALL TIMES. Or else. You kick them out and get your other friend to join first.

They rejoin. The character creation screen does not proc. You kick them out again.

They rejoin. Finally, they are shown the creation screen and get to work. Meanwhile, you fuck around and organize camp. Man, they sure are taking their sweet time—it has been like 15 minutes. The game senses this and lovingly crashes.

So you relaunch the game and go through the same process of giving your one friend back her dwarf and letting the other make their character. They do it a bit faster this time and load into the world. "Wow, cool!" you say, glimpsing their character for all of 0.5 seconds before the game immediately crashes.

So you relaunch the game AGAIN and chant GO GO GO over Discord voice chat with no regard whatsoever to your sleeping

family, fully believing the odds will be beat this time, that the githyanki wizard speedrun any% will finally bear the fruits of their labour. As soon as they load in you waste no time admiring and begin feverishly mashing the quicksave button. It works. You cry tears of joy as the game crashes again.



It's 1 in the afternoon. This is the only day this month that's worked for everyone. Your party is standing together on a sunny hill. Every so often, a squishy sound comes through your mic. The dwarf carries around an Intellect Devourer corpse from back at the Nautiloid and in moments of inspiration, throws it around on the ground to paint with its blood: this is one of those moments. You have gotten through one fight today. Your next session will probably be half a year from now. This was the highlight of your term.



mobpsychofan

IN APPRECIATION OF A VERY WELL-ALIGNING SET OF NUMBERS FOUND IN THE WILD

Despite writing for esteemed publication **mathNEWS**, I have a confession to make. I am not a math student. Please don't tell the editors. [Editor's Note: ☹️] I have not taken a math course since first year statistics. I was recently corrected that LaTeX is not something that gloves are made of. I heard complaints about 1st year CS courses not from math students but from geomatics students. I didn't even go to the Math C&D until last term. Sometimes, I dare say, I even skim over some of the more technical math and coding articles (despite my immense respect for their authors).

But today, I am to erase my transgressions and present a offering to the gods of **mathNEWS: Math Content**.

Anyways, at work today the two sediment values I was adding (103.4285714 and 116.5714286), added perfectly to 220.0000000. Pretty cool, right? Anyways, I need lunch for tomorrow and will now be taking my pizza.

Lars Nootbaar

ONTARIO HIGH SCHOOLS CAN'T TEACH CALCULUS

SOMETHING I SOMEHOW DIDN'T REALISE WHEN I WAS IN HIGH SCHOOL MYSELF

So I'm helping my brother (Grade 12) in his calculus and vectors class, since he is not doing well. I, as the most mathy person to come out of my high school in the past few years, am the natural choice for a tutor, on top of being extraordinarily convenient. However, this is really showing me the cracks in the Ontario education system harder than I ever knew, and I've worked for Mathnasium.

As a math person through and through, I was completely unaware of this when I was in high school myself. Honestly, I was very unaware of things in high school in general. Many of you were probably well aware of this, but nothing could prepare me for what my brother was about to unleash upon me.

First, I was already sort of aware of this, but how come people will not apply any thought to anything? This is math class! Do you think you can turn your brain off? Do you think that you can just put stuff into the calculator and it will give you the right answer without considering anything else!? I was already aware of the issue of "word problems" being a struggle for some people, but this is just so much worse. This guy cannot even parse a purely mathematical question with the slightest word implication. If things aren't worded a certain way then he and many other people in his class will not get what to do.

Also, the reliance on calculators is out of control. He won't do basic mental math. What's worse, he won't do simplifications that will reduce errors. He knows that he will mess up negative squares if he forgets the brackets. He knows it's an issue. And yet, he will not cancel the negative.

Next, is his reliance on rules without actually understanding when to apply them. I have straight up given him a correct statement and he complained that "the rule was wrong". Never did I say it was a rule. If he actually understood what the chain rule was it would have been obvious what he had done wrong and how to fix it. But no, he said that he had to figure it out by trial and error, and that I was stupid for not having written $\frac{d}{dx}x$ at the end of an equation, despite that being equal to 1, which is completely unnecessary. Why are you putting more brain power into English class? Seriously, you already learned what to do and why, yet you refuse to use it. He is somehow convinced that the quotient rule, objectively the ugliest and most unnecessary of derivative rules, is the best, or at least better than chain rule. I plead and plead and plead for him to use the chain rule and he refuses, because he wants it as part of the rules that he memorises. Chain rule is extra bad for this because it requires almost no setup to write so it's not like not having a simplified version is even a detriment to writing speed, yet for some reason he feels that "going through all the work" would slow him down.

He also refuses to do work that would benefit him. I tell him to problem-solve and even how to do it and he doesn't try. At best, he guesses answers haphazardly until he stumbles on the right one and stumbles right past it, before I finally can't

take it anymore and just tell him the answer. Simple manipulation is all I ask and he doesn't have the motivation to do any sort of practice that isn't directly applicable to what's on the upcoming test. It's practically asking for overall failure if you only try to learn to computationally do the task at hand.

This is peak shortsightedness. If you constantly chase what's always in front of you you'll never see the big picture. And the system incentivises it!

Beyond this, the system has much more blame to take, as well.

He consistently has missed important and basic information that his teacher wanted to assume and then had to teach. My brother was neither taught difference of powers nor binomial expansion in advanced functions. *What in the world?* Then, his calculus teacher tries to bring it up and the class says, "We never learned that." Math education in Ontario is much less consistent than most other education systems around the world, yet somehow manages to consistently be behind its own schedule.

Speaking of the Ontario math curriculum, destreaming just happened the other year. Now, I should hope this goes without saying, but when you have multiple people already getting 100s and a huge grade inflation problem that everyone is sick and tired of, why in the world are you making it so that people must take an easier math class than they could have otherwise been given? Goodness knows that the old applied and college streams were just as behind schedule as the academic and university ones.

There is so much more that I could go into, and it would probably be good if I did some more research. But frankly, I'm so disillusioned that I might pivot my career to rewrite the entirety of Ontario math education myself. This is unacceptable and we need not put up with it.

別

N NS

- *n*
- *n*
- *n*
- *n*
- *n*
- *n*
- *n*
- *n*
- *n*
- *n*
- *n*

MY EPIC FUNCTIONAL LANGUAGE NOBODY HAS THOUGHT OF

I CAME AT 9:30 AND I NEED TO GET PIZZA HELP

Ok, so there is something I hate about languages: parameters. What's up with them? There are too many ways you can pass them. Take a sum function, for instance. You can pass an indefinite amount of arguments. Or you can pass an iterator. Or you can accept exclusively two arguments and chain sums together. This sucks; you should only have one way of doing anything ever. I like lambda calculus, so I think everything should just have one argument. I also like JavaScript, so I think this argument should be an object. Actually, everything should be objects. Enter LambdaScript.

The parameter of any function is an object, but you have to describe it. In particular, you have to specify the member attributes and their types, and the member functions and their input types/return types. However, the only separation between functions and objects is that function members are initialized to "abstract" values i.e. types, and objects have only exact values. So a function signature looks something like:

```
object loo = ({
  name: string
  age: int
  sayhi: ({}))
})
```

Now, function objects are manipulable. For instance, we can do `loo.name = string`. Or, we can "actualize" it with a real value: `loo.name = "bob"`.

The only LambdaScript operation is substitution. For convenience, we can run some default initializations when an object is instantiated. We can create if-else expressions like so:

```
object result = ({
  first: any
  second: any
  res: any
})
object true = result //default pass by value
true.res = &true.first //& is a reference, like_
↵c++
object false = result
false.res = &false.second
object expr = ({
  input: result
  ontrue: string
  onfalse: string
  // instantiations
  input.first = &this.ontrue
  input.second = &this.onfalse
})
object myexpr = expr
expr.first = "it's true!"
expr.second = "it's false!"
expr.input = [some value of type result]
```

The instantiations will then run their course and store the output in `expr.input.res`. I think this works enough to be Turing complete but I'm too tired to really deeply analyze it. Tune in next term for a potential LambdaScript compiler and more examples, if this even makes sense. In the meantime, feel free to try writing LambdaScript programs, modifying the language specification as necessary, but hopefully not at all.

epic_waterman

N MORE HAIKUS AGAIN

CS 350 MIDTERM

CS three fifty
was bad, we can all agree
won't you curve it please?

PS: it was curved 17% and I passed

ARCHERY

Archery is cool
Katniss Everdeen moment
I wish I was good

LAST PROD NIGHT

Last **mathNEWS** prod night
It's the end of an era
I'll see you next term

M3

M3 is so cold.
Maybe it's just me. Either
way turn up the heat

END OF THE TERM

The term is ending
Not ready for my exams
Kinda depressing

LAST HAIKU

Last one for the term
I hope you liked my haikus
If not, then screw you

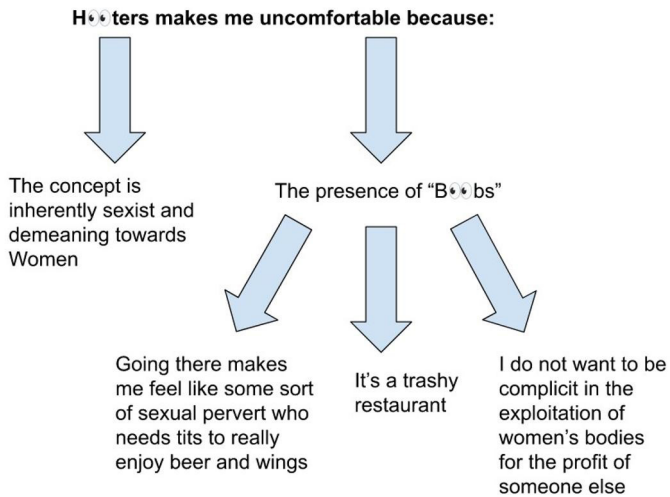
[insert pen name here]

THE MORALITY OF HOOTERS

I READ MULTIPLE ACADEMIC ARTICLES FOR THIS ☹️

What makes us so uncomfortable with Hooters? It isn't the concept of a sports bar with overpriced wings and beer. Through my research and interviews, a central theme has emerged as to why people find Hooters distasteful: The Hooters Girls™.

To specify, not the people who work at Hooters, but the cultural concept of the Hooters Girl™. The main discomfort can be broken down into this flowchart:



Keep that last bit in mind.

Another interesting observation about Hooters is the way people refer to it. Many people who I've talked to about the restaurant refer to it as softcore porn. While I think that is very rude to the people who work there, I believe it is an *incredibly* interesting comparison. How different is the job done by the waitresses at Hooters from some sex workers who don't dabble in nudity? It is a very grey line. Working at Hooters is far beyond the usual exceptions of a waitress. Hooters girls put in immense amounts of emotional labour to charm customers and to deal with the massive amounts of sexual harassment. As well, so much underappreciated labour goes into maintaining the 'look' of a Hooters girl.¹ How different is this from work done by escorts or hot tub streamers?

Moreover, the way we approach the women who work at Hooters mirrors our morality towards sex work. In Canada, the legality of sex work follows something called the *Nordic Model*. It is technically not illegal for people to sell sex, but it is illegal for someone to hire a sex worker and for the sex worker to use the money they make for pretty much anything.²

A line can be drawn.

We have an attitude where it is not immoral for women to work at Hooters, #FemaleEmpowerment, but it is immoral for them to flaunt their career and immoral for others to go

to Hooters to "exploit" them. The model both for sex work and morality, casts women as victims of cruel exploitation. It maliciously ignores the agency and rights of sex workers, and in this case, the dignity of waitresses. A proposed alternative to the *Nordic Model* is decriminalization of sex work. I think we should take a similar moral approach to decriminalize our attitudes towards Hooters and the women who choose to work there. It's just boobs. Calm down.

I believe the main issue with Hooters is not the sexualization and objectification of their workforce. Rather, the issue is I had a bad time at...

MONTREAL HOOTERS

"THE LOOK"

Under the watchful eyes of Leonard Cohen, in a 16 story mural, we traverse the streets of Montreal. Minutes away from the Fine Art Gallery exists a gallery of... less than fine art. The Montreal Hooters occupies a 6 storey building, a tower of hubris and wings. The vibe of this Hooters is one of effort. It tries so hard to be a middle-class fast-casual family dining establishment. Yet, small peeks of Hooters filter through with signs like "Tipping isn't just for cows" and "If we delivered, we'd be called Knockers."

MENU AND FOOD

Since Hooters is a franchise, most menu items are standard across locations with some regional variation. This location seems to have the most boilerplate menu.³ It spanned a scant trifold with only half of a page for drinks. Where is my silly sports bar? Last time I went to Hooters, I was amazed, even overjoyed about the quality of food. After such a win, I wanted to challenge the Hooters brand and get the worst menu item I could think of: The beef hotdog with curly fries *All The Way*.⁴

My chili cheese hotdog arrives. My dearest readers: it was Not Good. When I went to grip the hotdog, the structure of the bun crumpled, leaving my hands desperately clutching to the vague idea of where the hot dog once was. Obviously, I needed to recalculate my approach. My hand released the hotdog and I gazed upon it to see a smear of nacho cheese across my palm. God, why? The meal quickly became a game of avoiding *All The Way* on top of the hot dog. The cheese was messy more than tasty, the chili wasn't even spicy, and the fries sucked ass. My compatriots didn't fare better. Three of them ordered a salad, each a different type. All hated it. The only saving grace was a \$5 chicken soup and it was really good.

WILL NO ONE THINK OF THE CHILDREN?

A key marketing strategy for this Hooters is that it is a *family friendly* restaurant. In fact, halfway through our lunch a family with 3 kids entered the restaurant. Which means that there exists a Hooters kids menu!⁵ I got a copy for *Research Purposes*.

It contained such exciting insights like how the owl from the Hooters logo is named Hootie. We also rediscovered the immense joy of playing tic-tac-toe. And the immense boredom from a children's menu that is around 80% tic-tac-toe boards. Incredibly low effort.

CLOSING TIME

How do you get someone to pay \$15 for a messy hotdog and stale fries? Hot waitresses. This Hooters felt more like a sad attempt at a mid level family dining establishment than a sports bar. A slightly bizarre Boston Pizza, if you will. The reason I enjoy Hooters so much as a concept and as an experience is the camp of it all. I think by trying to make Hooters palatable to a wider audience, a lot of the charm is lost. And this is somewhat systemic for the Montreal location. The food is just okay at best, and overpriced. There are few drink options for a sports bar and the barrage of old—but not yet nostalgic—pop music creates an underwhelming atmosphere that sucks the joy out of what should be an adventure.

Despite my love of breasts and themed restaurants, I give this a 4/10.⁶

rockfacts

1. Newton-Francis, M., & Young, G. (2015). Not winging it at Hooters: Conventions for producing a cultural object of sexual fantasy. *Poetics*, 52, 1–17. doi: 10.1016/j.poetic.2015.06.003
2. An incredibly insightful video I recommend you all watch <https://www.youtube.com/watch?v=1DZfUzxZ2VU>
3. This location does call appetizers 'teasers' so some points for creativity
4. This is with nacho cheese and chili
5. It also came with crayons which I still have!
6. I think a restaurant would have to poison me to get a 3/10. Kill me dead to get a 1/10

TOP 10 RINGO STARR ART PIECES

Best known for being a drummer in The Beatles, Ringo Starr's arguably top talent is his finesse with a (digital) paintbrush in MS Paint. Cultivating his talent for almost two decades now, it is rarely appreciated to the level it deserves. I am here to put a spotlight on a diamond in the rough. If you want to follow along, please visit <https://www.ringostarrart.com>.

Before we begin, let's cover my qualifications for ranking this art. My experience with critiquing art consists of looking at the aforementioned website for a whole 15 minutes, as well as scrolling through art collections on the Instagram Explore page. With my credentials established, let's get into Ringo's best works:

10. Good Guy One (2008)—This painting is a deep social commentary about how the good people in society are overworked and underappreciated. The bloodshot eyes show exhaustion. Good Guy One is clearly at his limit and should not be fucked with, a steep contrast to his name.
9. Wooden Man (2015)—This man is truly wooden. The rigidity associated with wood is not lost on him. Although his humour may be stiff, he does not care what others think of him. His joy of life is truly contagious. Hopefully he makes you as happy as he makes me.
8. Four Wooden Men (2019)—What's better than one wooden man? Obviously four wooden men! Four years after (coincidence?) the original hit, Ringo releases another banger. With four men instead of one, he can have them express four times as many emotions.
7. Space Men (2017)—The duality of our anxiety and curiosity of space is displayed in this piece. The scratchings of glasses on the painting signify how we often only see one of these two sides of space. Looking beyond the mix of colours, we can see a scary truth; Ringo's depiction of what he saw in Area 51 proves he has surpassed the power of the government and should be feared (this power comes at a close second to his artistic skills).
6. Bandana Man with a Spray Can (2014)—Ringo tried to make him anonymous, but we all know who it is (don't worry Ringo, your secret is safe with me).
5. Snail Eye (2007)—A geometric piece with beautiful colours. The background spirals highlight the elliptical nature of the eyes. Many people (me, myself, and I) speculate that this is a prediction of how snails see, but Ringo has not confirmed its intentions.
4. Elephant Foot (2008)—The interpretation is left as an exercise for the reader.
3. Peace Forest (2013)—The diversity of species represented in this piece, from clipart birds to clipart grasshoppers, show the symbiotic relations in nature. A simple concept but done expertly with a myriad of colours to spread his idea of utopia.
2. Don't Pass Me By (2015)—A nod to his first ever solo composition during The Beatles era (before his realized greatness), this feels like a fitting sequel to Good Guy One, this represents the same energy on a personal level. It feels like it is speaking right to our souls, that we should not ignore this person nor make them cry nor blue.
1. Yer Baby (2005)—Yer Baby gives a good summary of all classic Ringo art pieces. It is the epitome of digital art and cannot be surpassed. There is no competition; All past and future art pales in comparison to the beauty of Yer Baby. For only \$3,800, it's a total steal.

THE BATTLE ROYALE FOR BATTLE ROYALES 4

And here we are, at the home stretch of all the BRs we tried! Let's jump right into it.

FARLIGHT 84

This game has some nice ideas, but unfortunately in the end feels a bit bland. Yet another mobile BR that got ported to Steam, many games have you crush the poor mobile players as you play on a PC. The monetization is also quite egregious, as there's *so many* different types of loot boxes, many of them being limited time for events.

As for the gameplay, you can pick different characters, each with their own abilities, such as a funny looking duck... thing who can roll around into people like a bowling ball.

I didn't really try out too many other characters because the duck was funny looking, but they didn't seem that bad, if not generic for a few of them (deploy a shield, throw a grenade, etc.), but some were pretty fun like turning invisible or summoning a black hole. There's probably a character with at least 14 available (according to their site). Unfortunately, you have to unlock each character individually, which may be quite annoying (especially since iirc you have to do so by levelling up, although maybe that's just for the tutorial characters).

The gunplay has nothing to really talk about, and fights were kinda scarce and typical to what you might see in other FPS BRs.

What I think really stood out with this game were two things—the movement and the vehicles. Let's start with the vehicles. Some were pretty plain, like a motorbike or a regular car, but they all had their own weapons that felt good to use (shotguns, flamethrowers, sticky bombs, etc). But there were also some really cool vehicles, like an actual mech with gatling guns (that felt better than the Mecha BR a few issues ago), a hovering mech with lasers, spider tanks with missiles, and an airplane that would fly up into the sky and slowly descend as you attack from above. As for the movement, each character had their own jetpack, letting you quickly ascend into the sky briefly, or move to the side very quickly, with 3 charges shared between the skills. This allowed for combat to be very mobile yet fluid in motion, allowing you to outmaneuver your opponent. Unfortunately, this feature was apparently removed recently, looking at the store page, leading to quite a few angry reviews.

Verdict: You jump out of a really cool Battle Bus that had missiles on it, only to find the actual gunplay to be rather boring. You wish you had stayed on the cool bus after you die in the 2nd fight after running for several minutes straight.

TOTALLY ACCURATE BATTLEGROUND

From the creator of Totally Accurate Battle Simulator comes a BR with all the ragdoll physics you love. Even jumping out of the bus has you hurtling towards your location, hitting the

ground like you're made out of Jello. Jumping and firing is certainly one of the things you do in this game, because every time you do that you flail about wildly. It's actually better to just jump constantly as you fire, as it's more accurate.

The weapons are pretty fun to play with, as you can grab several attachments for your weapon to customize them further. Beyond your typical guns, you can find spellbooks to shoot lightning, or even mythological weapons to create ice walls as you chop down your enemies, or to trap them as your driver runs them over in your car.

There's also *countless* unique grenades, like creating arrow rains, jump pads, healing auras, black holes, or even giant traps to trap your enemies in. And that's not even getting into the three blessings you can find—unique modifiers that allow for effects like an extra jump, healing on damage, buffing yourself when you taunt (which you can customize to sound truly horrifying), or even just calling in an airstrike (my favourite divine power).

When you die, you can also do a fun minigame where you have to avoid obstacles and make it to the end before the walls close in, and if you do well enough you can revive with a powerful blessing (or a curse if you do very poorly, such as being unable to jump or randomly firing your guns).

Verdict: You fling yourself out of the Battle Bus, probably getting several broken bones as you slam into the ground. You flop around like a fish out of water, managing to make it to the final round, screaming at your enemies as you jump around. Unfortunately, you lose at the very end as your cursed friend throws a knockback grenade and gets you launched to your demise.

MY HERO ULTRA RUMBLE

One of *the* games. It's yet another BR with gacha mechanics to unlock cosmetics, but MHA themed! The actual gameplay is... interesting, to say the least. You get to play as one of many heroes from the show (I did not watch the show), and each hero has 3 unique abilities. You can upgrade your abilities with certain cards you find lying around the place. You play a strange version of a 3D fighting game without lock-on as you try to attack your opponents with various close range attacks and abilities. If you lose all of your shield you then get stunlock into oblivion so if you have no shield you're basically dead. Again, one of *the* games. In the end, none of it matters because while everyone has to fight close range, Bakugo exists. Bakugo has piercing railguns that will snipe you across the map and easily kill you, because that is fair. We were struggling to get a win for hours until we realized "Oh shoot Bakugo is kinda broken," and then easily won first try and uninstalled this horrible game.

Verdict: Screw Bakugo all my homies hate Bakugo

CURRENT HYPERFIXATION: GOKANARU

PART 1

Originally, this was going to be an article about the movie *They Live* but I found a new thing to hyperfixate on as of last Thursday. I have since consumed what most people would consider an unhealthy amount of content on this topic/channel/idk-what-to-refer-to-it-as. However, I would still like to say that *They Live* is a fun movie and would recommend watching it, it'll only take like an hour and a half of your life as opposed to this hyperfixation.

You're probably asking yourself, "Okay, so who/what/why is this YouTube channel worthy of the amazing and wonderful Sexy_Software_Babe's hyperfixation?" Worry not, dear reader, as I will now explain. I'll start with the short answers: Gokanaru is the channel of a guy who has been posting since he was 12 years old and who is now 24—AKA a YouTube veteran. I found his channel through an hour and 50 minute long video titled "The Absolute Annihilation of Sneako," the third episode in Gokanaru's Video Vigilante series.

Now, if you've been around on the internet for some time, this may seem familiar to you, much as it did to me—Video Vigilante brings to mind Content Cop, the series iDubbbz made dissecting and taking down other content creators. At first glance, you'd be correct to assume that this video is much the same, but it goes deeper than that. Let me take you on a journey, dear reader, the same journey that I have been on over the past five days.

I had been watching a bunch of video essays on topics that I guess could be argued to be tangentially related to Sneako, but for the most part, were unrelated. "The Absolute Annihilation of Sneako" popped up in my recommended, and I was feeling like hearing someone being bashed on for a little while that day. So I said "why not?" and queued it up so that it would play while making and eating food. I regret not having paid full attention, but I also would've been unlikely to understand any of the context as this was the first Gokanaru video I'd ever watched. It worked well as a stand-alone video, and that's all the thought I really gave it until the last 5 minutes or so.

However, in those last 5 minutes, I got jump-scared when a different YouTuber, jREG, showed up out of nowhere. I laughed at that, then subscribed because I enjoy jREG's content and my subscriptions page is already at 500+ people so what's the harm with adding one more? I put it out of my mind until the next day because I had other things to attend to. On Friday, I returned home from Board Games with Profs and finished a few other minor assignments. Afterwards, I opened up YouTube and it just so happened that at the top of my Subscriptions tab, Gokanaru was streaming. I found out later that apparently he streams every Friday evening at 9:30, but at the time I thought it was just a coincidence and I opened it up out of curiosity.

I was instantly captivated by the extremely relaxed energy of the stream and enjoyed just listening to this guy talk about random philosophy stuff (even though a bunch of the chat

wanted him to watch a specific interview that I wasn't familiar with). It was so calming ~~except when a \$50+ donation would come through and trigger a scream~~ that I actually just fell asleep while listening that night. I would also like to add to this piece of info that this happens to me very infrequently, so this was rather unexpected.

The next day was Saturday, which for me was laundry day amongst other things. Naturally, this was the perfect time to put on some other videos in the background, almost as podcasts of sorts. It was on this day, as well as the morning of Sunday, that the Gokanaru channel blossomed into a full hyperfixation. Remember how I mentioned Content Cop, and by extension iDubbbz, earlier? Well, dear reader, the Gokanaru video that truly made me obsessed was a 37-minute stream clip¹ where he was talking about what had happened with iDubbbz as of (at the time of the stream) recent. Except instead of just looking at the situation and bashing on one or both parties, somehow this guy managed to teach the story of Octavius/Augustus Caesar to his whole audience and then paralleled it with the iDubbbz situation. This is absolutely not the first time I've been exposed to this part of history, but this was by far the easiest to understand and actually have stick in my brain.

Let that sink in for a minute. Out of all the possible different ways to learn about history, the way that worked best for me was this random YouTuber that I had found three days before. Maybe it was just my brain being weird, but I really enjoyed that stream and found it an infinitely better learning experience than most of my lectures so far—no shade to my profs, just different ways of learning for different people!

Anyway, I watched a bunch more of Gokanaru's videos that evening (and accidentally watched a response video before watching the original video he made on the topic). Monday I had class, but after I got home I went to put something on in the background and found a community post by Gokanaru that he was a contestant on Kick or Keep, a game show streamed by Destiny. This stream was horrible, there was lots of shouting, but Gokanaru won! He got to the top 2 by barely saying anything, and then laid down and let the other finalist yell at the hosts until they kicked him off because of misconduct.

It was only then that I realized that the eyepatch and bloody gauze he had over his eyes were real. This dude had won a gameshow while his eye was bleeding out, AND THEN STREAMED ANOTHER 3 HOURS ON HIS OWN CHANNEL. WHO DOES THAT???

To be continued...

Sexy_Software_Babe

1. <https://www.youtube.com/watch?v=bqxE1jFMMBg>

N BOARD GAMES I RESCUED FROM MATHSOC BOARD GAME SALE

NOW PLAYING: SCATTERED AND LOST — LENA RAINE — CELESTE (ORIGINAL SOUNDTRACK)

GALAXY TRUCKER BASE GAME + GALAXY TRUCKER ANNIVERSARY BOX

These ancient artifacts were printed in 2007 and 2012 respectively. They were heavily played: the broken cases and missing components are telling the story of many marvelous intergalactical adventures. In *Galaxy Trucker*, players assemble their ships by placing square component blocks one by one in a given amount of time, and the first player completing their ship will go first in the upcoming space race. Although their journeys might be ended by meteor strikes, space pirates or alien invasions, fearless galaxy truckers will load goods from alien planets, salvage abandoned ships and stations, and return to their homeland with valuables and glory. I also found a sticky note included in each box, listing the missing pieces. They were carefully taken care of during their glorious years. I am sincerely grateful for the previous curator who noted these missing components. Although it is a time-consuming effort, their battle-scars have been gracefully acknowledged.

YOKOHAMA 横濱紳商伝

A classic strategy/worker-placement game that I enjoyed playing. Comparing to other artifacts that were on sale, it was in very good condition. In *Yokohama*, you played as a merchant from the Meiji period, trying your best to earn fame and fortune by assigning work to your subordinates and by planning your trading route carefully. The game mechanics are so unique in a way that I highly recommend you try on your own. You can also play it online for free on www.boardgamearena.com.

ROLL FOR THE GALAXY

This board game was popular during my time. Players build their space empires by developing new technologies and by settling on alien planets, while trading or shipping goods for resources or reputation. Similar board games like *Race for the Galaxy*, *New Frontiers* and *Jump Drive*, each share the same setting as *Roll for the Galaxy*. I found *Roll for the Galaxy* to be the most interactive one in terms of game mechanics. To maximize the productivity of your space empire, you need to predict what others are planning to do.

VERDICT

These were the board games I rescued from MathSoc Board Game Sale. If no one purchases them, they will be kept in storage without being listed or rented until the next board game sale event happens. I see the value in them. Although imperfect, they are imbued with many shared memories, not to mention that many games were also out-of-print as well. After doing some repairs and reorganization, they are ready to be played again.

I really enjoyed playing board games at MathSoc Board Game Night. Back in 2018 and 2019 when I was there, the game nights happened on every Thursday from 7pm till midnight. We didn't have an official board game club back then, and the MathSoc office was the only place on campus that held an extensive board game collection. Many board game hobbyists, including many **mathNEWS** writers, were gathered there to take a break from work for a night of joy.

If anyone is interested, I am more than happy to bring them up during MathSoc game nights, regular Board Game Club meetups or WatSFIC meetups, whichever works best for the situation. Also wondering if anyone wants to play *Mao* sometime (am I allowed to say it out loud?). We might have enough interest to restore a *forgotten mathNEWS* tradition, while we still need a person (ideally with **BLUE** clearance) to teach it.

eralogos

WHEN WILL THE C&D BALCONY REOPEN?

Ok, so, imagine outside, right? Fresh air, sunlight, bird sounds, all the good stuff. Now imagine all of that but with less wind and more shade and more concrete and being higher up the ground. Sounds like paradise. Unfortunately, the door to this paradise has been locked since last year, with a sign informing us that the balcony is closed "til Spring".

This was disappointing enough a month ago. It's borderline criminal now that it is, unquestionably, spring. As I write this it's 11 degrees and sunny, and it's several days past the solstice too, if the calendar stuff matters to you. If you ask me, it's been spring since mid-February. [*Editor's note: it's not Spring until the Undergraduate Calendar says so.*]

Every day that I'm forced to read my book in the rock garden instead of the warm concrete embrace of the C&D balcony is a tragedy.

__init__

I love games! They're comfy and easy to play!

A PRO GAMER mathNEWS EDITOR

RATIONAL UWU

recently, I discovered **Rationality: A-Z** (or “The Sequences”) which is a series of blog posts on human rationality and irrationality in cognitive science by Eliezer Yudkowsky (who’s been discussing AI alignment since 2009, before it was cool.)

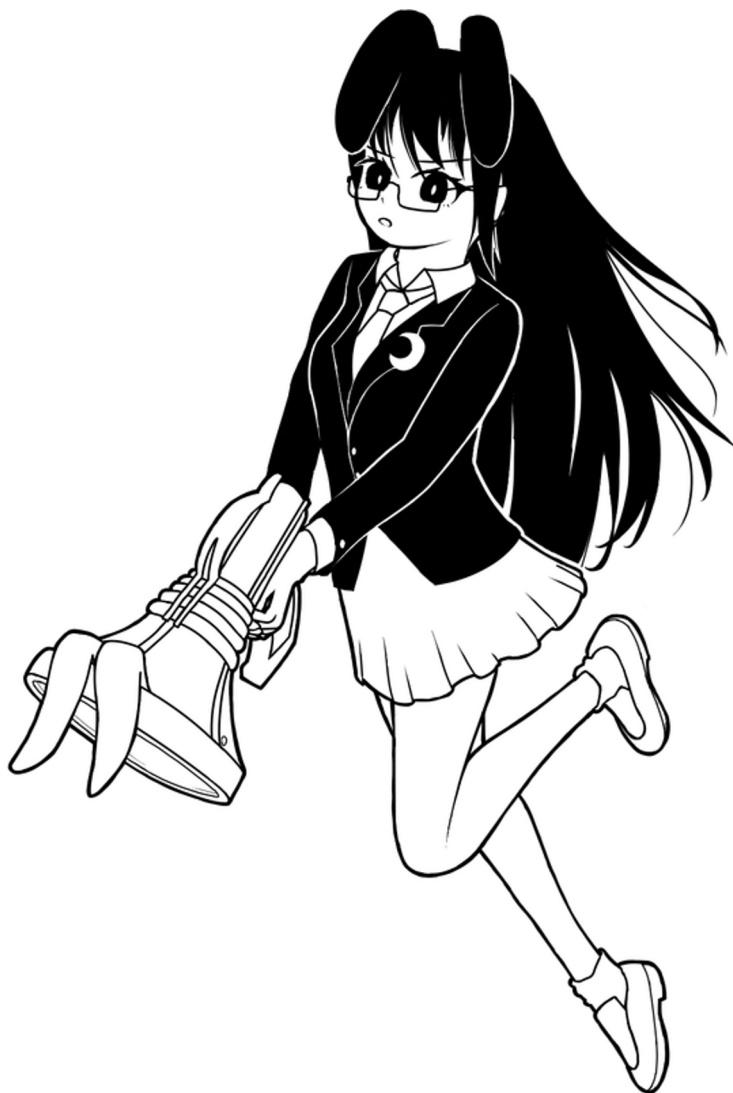
some of these posts will probably make the average math student think, “hey I realized this on my own and came up with an isomorphic idea for navigating reality years ago,” but I hope you find at least a few of them interesting and enjoy reading!

(here is the link: <https://www.lesswrong.com/rationality>)

violet confusion

if you like this sort of thing, feel free to add my discord @gt162

SKETCH 2



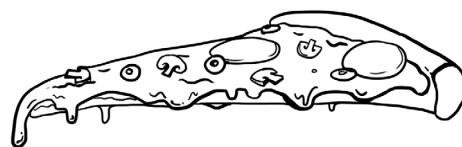
snowdozer

PICK-UP LINES YOU SHOULD DEFINITELY USE FOR SURE THAT WILL WORK GUARANTEED

- Hey there, are you the Boston Massacre because things should get surprisingly physical between us.
- Hey there, are you a perfectly fit and strong young man because I want to use you at your prime and then leave you behind and make sure nobody ever hears your name again.
- Hey there, are we the assassination of John F. Kennedy because no one saw us comin’ and look where we are now.
- Hey there, are you the Stanford Prison Experiment because whatever’s happening between us is morally ambiguous.
- Hey there, are you my math homework because I don’t get you but I have to do you because of SOCIETY.
- Hey there, are you YouTube because I watch you for hours everyday.
- Hey there, are you Chernobyl because BOOM.
- Hey there, are you COVID-19 because I don’t want to leave my house because of you.
- Hey there, are you pure mathematics because I don’t really care but my boyfriend is really into you.
- Hey there, are you my anxiety because I can’t get you out of my head.
- Hey there are you the US Military because I find you sexy despite my moral opposition to your existence.
- Hey there, are you Afghanistan because it took seven years to pull out of you.
- Hey there, are you Britain because I want you to colonize me.
- Hey there, are you a member of Parliament because I feel like you never listen to me.
- Hey there, are you my high school chemistry teacher because I want you to flirt with me despite our enormous age gap.

This article is dedicated to my good friends Barret and Madhav, who originally created some of these with me 2 years ago, Vista who contributed by inspiring me to leave bed and come to **mathNEWS**, my cute boyfriend and fellow **mathNEWS** author nazz who is cute and I like, and all my math friends who contributed to the writing of this article because they are cool and funny.

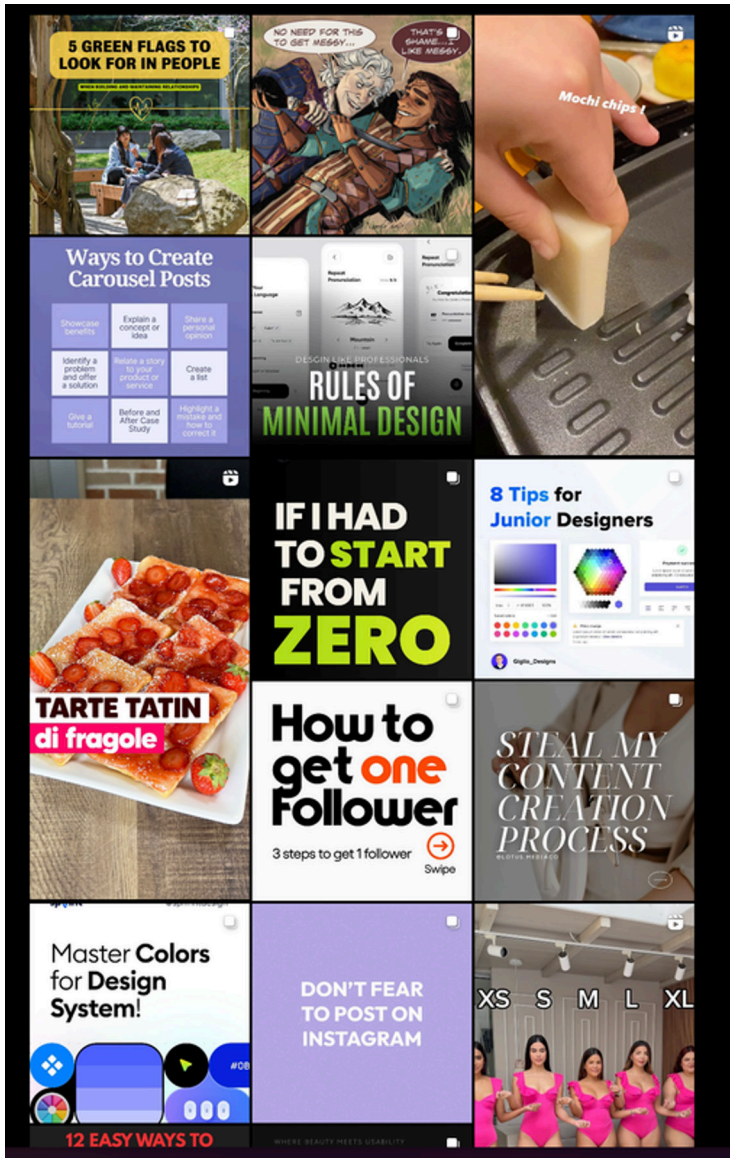
Panda!Panda!Panda!



A SNEAK PEAK INTO PMAMCOC'S INSTAGRAM EXPLORE PAGE

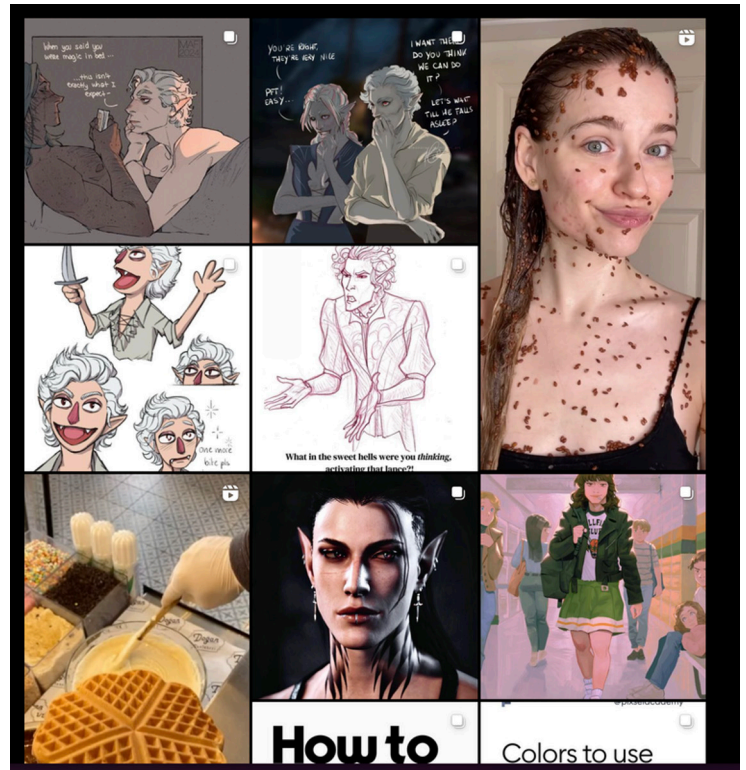
As a VP, you get access to so many cool things. And today I have received permission from your goated prez to share the inside scoop.

Let's start with a screenshot first:



MY REVIEW

This seems like how I would expect a relatively unused Instagram to look like. Of course it's not entirely untouched so the UW Math influence is there (with the post from Campus Housing and, of course, the masochism). Not as interesting as I thought it would be, but oh well. I'll reload the page and do another one.



MY REVIEW

Hmmmm... This is... definitely something. I guess the algorithm saw me and gave me what I wanted. This is definitely very mathy tho ngl.

Before writing the article, my plan was to send cursed posts from my Instagram to the club account and skew the feed for the next VP but now after the reload I don't think I need to. It's awesome as it is.

0.423

GOD GIVING mathNEWS WRITERS HIS HARDEST BATTLES (2024, COLOURIZED)

Issue: 154.6

Question: "How would you cause a solar eclipse?" (HARD MODE: ANY ANSWERS SIMILAR TO "YOUR MOM" WILL BE INSTANTLY REJECTED)

ANIME REVIEWS PART 8

HONESTLY I'M SURPRISED I EVEN HAD THE TIME TO WATCH AN ENTIRE ANIME THIS TERM

JUJUTSU KAISEN — 8/10

If you follow even a modicum of anything anime-related, there's a pretty good chance you've heard of *Jujutsu Kaisen*. Even if you don't, you'd at least have seen some of its visuals if you've ever encountered such internet memes as, "Nah, I'd win," or "Wallahi I'm finished," which the show spawned and popularized respectively. In fact, if you went to The Alley in the plaza for bubble tea last term, you couldn't have missed the cut-out they had of Satoru Gojo donning his iconic sunglasses. MAPPA really went all out with the marketing, and I guess it worked, because here I am writing about it.

In the world of *Jujutsu Kaisen*, negative human emotions coalesce over time into something called "cursed energy", which gradually leaks out of the body and eventually manifests as "curses", which are vengeful spirits and monsters that cause mysterious deaths across Japan on account of most people being unable to see them. The so-called Jujutsu Sorcerers, however, aren't most people—they were born with an exceptional amount of cursed energy, which lets them see curses, and more importantly, exorcise them to protect people. That's most of what happens throughout the anime: *Jujutsu Kaisen* roughly translates to "Sorcery Fight" in English, and that about sums up the plot—sorcery and fighting.

Now, I'll be honest, I'm not a big shounen person and I wasn't sure if I'd enjoy watching people beat each other up for several minutes at a time, especially if there weren't more thought-provoking elements to it. Fortunately, though, it absolutely delivers in that regard—the fact of cursed energy being both a weapon and the product of powerful emotions necessitates that those who wield it have some of the most neurotic personalities of all, and being able to control that plays a big part in each character's fighting style. I will say, however, that the sheer size of the cast made it hard for me to appreciate their individual character arcs as much as I otherwise would have. The show also explores the philosophy of death—the protagonist Yuji Itadori, who comes face to face with death on numerous occasions, often contemplates what it means to live a good life and for it to have a proper end.

But I don't want to spoil anything—and trust me, you have to tread carefully while watching *Jujutsu Kaisen*, because spoilers are everywhere—so I should mention instead that the show also looks amazing. The production value really shows in how intricate the character designs and animation are, and I would be remiss if I didn't mention how hard every single opening song goes. All in all, *Jujutsu Kaisen* is pretty sweet. And hey, if you actually like battle shounen, power scaling, and that sort of stuff, you'll almost certainly get more out of it than I did.

OURAN HIGH SCHOOL HOST CLUB — 8/10

There's no doubt that drama and tragedy can have their appeal, but maybe you don't want to cry. You already attend Waterloo, it's almost finals season, life is hard enough, and sometimes

you just want a show that'll put a smile on your face. If so, you'd do well to consider watching *Ouran High School Host Club*.

In short, the story is about a middle-class girl by the name of Haruhi Fujioka who attends the titular Ouran Academy, a luxurious private school for the children of obscenely rich people, on a scholarship. She aspires to follow in the footsteps of her late mother and study to become a lawyer, but these plans are interrupted when she wanders into a club room, accidentally knocks over a priceless vase, and effectively becomes an indentured servant to said club. The catch is that it's a host club, which is a primarily Japanese institution in which men called "hosts" service their female clients with drinks and flirtatious entertainment. Haruhi's short hair and masculine way of dressing frequently get her mistaken for a boy, hence why she is deemed suitable for the club which otherwise consists only of guys.

As it turns out—and I had no idea about this until after I finished watching the show—this anime has seen a bit of a resurgence recently since its release in 2006, especially in certain circles on TikTok and Tumblr. So on that note, it might be pertinent to mention that I am a cisgender heterosexual man. *Ouran High School Host Club* is likely to be an... interesting watch for those of my persuasion, given that it abounds in humour related to homoeroticism and the subversion of gender roles.

The hosts are explicit parodies of several male archetypes occurring in shoujo manga: among them are the strong silent type in Takashi Morinozuka, the refined intellectual in Kyoya Otori, and even the slightly-too-affectionate twins in Kaoru and Hikaru Hitachin. Not only does the author affirm this, but so do the characters in-universe, stating on multiple occasions that market segmentation is how they retain so many patrons. Also, as part of their escapades or otherwise, almost every member of the primary cast crossdresses at least once, and some of them more than once.

The dub of this show might just be my favourite one to date—the writing is great, the voices fit each character perfectly, and the chemistry between them is just sublime. (A warning if you choose to watch the dub, though—it was written in the 2000s, and in particular, contains a few instances of a certain "t-word" which, while not derogatory in context, is nonetheless considered an offensive slur today.) Beyond its comedy and the fantastical vibe that the academy gives off, however, the show does manage to get in a good deal of serious character development and conflict arcs without veering into melodrama. *Ouran High School Host Club* isn't perfect, and it occasionally shows its age, in questionable ways, but I liked it a lot.

TOP N UNDERRATED TOWERS IN BTD6

3. BOMB

Its first and third paths have one of the best pierce and damage for its cost to destroy swarms efficiently, making it great on timed stages. In addition, its second path does huge damage to MOABs, making it great for tier bosses especially on least time ranked, as one can spam the second path due to its cheap cost and melt tiers 1 and 2 quickly.

2. GLUE GUNNER

A very underused tower due to its lack of damage. However, its ability to slow Bloons is very useful when there is no surplus of cash for overpowered towers so one must slow them down for their other towers to do significant damage. This is especially the case in Chimps mode, where DDTs are arguably the biggest threat since they are very fast yet quite tanky.

1. ENGINEER

It can hard carry bosses, as its first path provides great damage for its cost especially in rounds up to tier 2, its second path can deal with camo and leads while being the best support tower, almost doubling DPS or income of one tower with very high uptime, its third path gives both reliable income and DPS in rounds up to tier 2, and it has a paragon which can usually solo tier 5 normal boss. Because of the efficiency, this is especially useful on Least Tiers ranked, as one can make great use of each path and then sacrifice them during later rounds for the paragon, making it consistently easy to beat normal in about 35 tiers, as usually only one other tower for DPS (to deal with tiers 2 and 3) and one banana farm is sufficient.

cultured BTd6 enjoyer

NO, I WON'T GIVE UP MY mastHEAD ANSWER

Last issue we needed to cut my **mastHEAD** answer (and other editors') for space reasons. I was very happy with mine so I am publishing it independently one issue late:

How would you remove Caesar from power?

DISTRACTED | I'd unplug him

distractED



N² REASONS WHY GATHERING SWARM IS OBJECTIVELY THE BEST CHARM IN HOLLOW KNIGHT

WHERE N = √5

1. Just look at him <3 <3 <3 [insert gathering_swarm.png]
2. You get cute fireflies too ε> ε> ε>
3. It is a "swarm" that does the "gathering"
4. Am lazy. No more picking up the geos (in-game money) manually
5. It only takes one charm notch, so you could equip eleven of those bad boys at once theoretically

pink bomb

A HAIKU ABOUT MY GLASSES

Right, 2.25,
The left, 1.75.
A slippery nose.

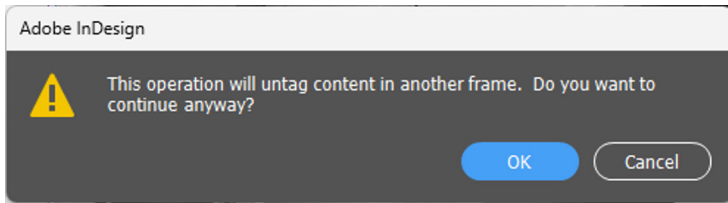
redwearer

ROBOTICS COMPETITION TAKES OVER PAC



firstie

DOOM AND DESTRUCTION BE UPON YE, ALL WHO FACE THIS DIALOG BOX



caffeinatED

TOP N WINK WONK gridWORD CLUES OF ALL TIME

AN OBITUARY

- mathNEWS 154.5 29A—Having qualities of a hero → HEROICAL
- mathNEWS 154.5 107A—Goodbye in English* → GOODBYE
- mathNEWS 154.4 6A—Piece of machinery → MECHANISM
- mathNEWS 154.4 42A—Hello in English* → HELLO
- mathNEWS 154.3 17A—Legal assistant* → PARALEGALS
- mathNEWS 154.1 48A—Partaking the odour of a rodent, say → SMELLING A RAT
- mathNEWS 153.1 28A—The answer is “araks” lol → ARAKS
- mathNEWS 152.1 50A—Kind of race → ARYAN¹

aphf

* indicates a themed answer, these asterisks are included in the hints

1. See nike’s article this issue

mathNEWS isn’t a cult.
We just lure people in
with free pizza and trap
them in our office. Come
by to get a taste!

A mathNEWS CULT LEADER EDITOR

LINKEDIN IS A STUPID STUPID COMPANY

FOR THE REASONS YOU THINK BUT ALSO
BECAUSE...

I managed to connect with Louis Rossmann (as in the YouTube right to repair guy) about the M&M vending machine incident but now I can’t log back in to LinkedIn. Why? Because although LinkedIn states in its ToS that anyone 16 or above can create an account, their verification service requires ID to be of a person 18 or older. The issue is that I am still 17 for another month and a half or so, and now I cannot respond to the third ever connection I have on LinkedIn until that time is over. By then the vending machine story will be old news (it already is old news around here) and I will have missed my chance to steal a tiny bit of the spotlight for myself :(

This is just another reason why LinkedIn is a stupid stupid company and should instead take after the Cards Against Humanity company¹ and just lean in to the idiotic chaos of it all instead of trying to take itself seriously.

Sexy_Software_Babe

1. See my article in mathNEWS 153.2.

N ARTICLE IDEAS I DID NOT TURN INTO ARTICLES IN MY TIME AS AN UNDERGRAD

- about the spelling of the word “lazeezza”
- gamer-themed parody of *Sultans of Swing* (this would probably turn out meh)
- not an article idea but I sent this message to blinchik in March 2022: “??? where did the third idea go?? can i only hold two article ideas in my head at a time??”
- Spy Kids 3-D: Game Over is basically SAO
- about how I get very into songs when they’re stuck in my head and then listen to different versions intensely and then suddenly my interest goes away
- Doodle Champion Island Games (2020 2021 Summer Olympics Google Doodle game) review
- dedicated path separator character
- where does everyone buy socks??

cutlet

I’m not listing any article ideas that I think I might reasonably still write about. Also, this is the only N things article I’ve ever written; I was very intent on not writing one previously to avoid being tempted to publish low-effort work.

MORE SONG RECOMMENDATIONS

YOU'RE WELCOME

1. "coelacanth". this one's about banksy or something
2. "motions". i am listening to this song right now
3. "slip under the door". i think "slip" is a verb here, but i'm not sure if it's transitive or intransitive
4. "guitar song". actually i recommend all guitar songs
5. "rare animal". this one's literally about d. b. cooper but figuratively it's about something else
6. "cul-de-sac". i used to think these were called roundabouts
7. "whalefall". bass guitar song
8. "puppy". recommend all puppies
9. "the killer".
10. "the CIA". this one's about the CIA
11. "200". there are 200 words in the lyrics to this song, i checked
12. "commatose". the second "m" isn't a typo
13. "abyss angel". chasm cherub

wacfeld

SHITTEDPOST

BASED ON REAL EVENTS

a star of david,
seen engraved in MC stall:
"shit too big. saw god."

mall

DON'T LOSE THAT SMILE

When you've been through some trials
and it's, been a while
and you, don't lose that smile
We went to a Farm
Basked in its charm
Watching the trees, the leaves, the bees
We spoke with his wife
How they met, when they wed
Reminiscing of their hometown
Lilies growing all around
It was the brink of spring
With a cold front raging in
We watched as the snow
Covered all life deep below
We wept for their child
But right before he left, he said
"Don't lose that Smile"

Pizzadonym

SHOUTOUT

to the people who play piano on the first floor of STC, so that I can sit on the 2.5th floor the night before a final and have live background music while I catch up on the weeks of lecture videos I haven't watched yet.

I can't see you from up here, but I really appreciate you.

__init__

IN UNAPPRECIATION OF A "VERY WELL-ALIGNING" SET OF NUMBERS FOUND IN THE "WILD" (DEROGATORY)

Upon consultation with my lawyers (who happen to be **mathNEWS** writers who are actually in the Faculty of Math), I have decided to redact my article "IN APPRECIATION OF A VERY WELL-ALIGNING SET OF NUMBERS FOUND IN THE WILD". It turns out that both of these "wild" numbers are divisible by 7 or some shit and are somehow not random. Upon review of my spreadsheet, it was unclear whether the numbers were random or not, but I was told it seemed "suspicious". My disappointment is immeasurable and my day is ruined. I spent thirty minutes thinking about ways to demonstrate I am not a math student and did not realize the most stark answer was right in front of me.

hateful regards,

Lars Nootbaar

ERRATA FOR mathNEWS 151.6

In **mathNEWS** 151.6 (Winter 2023), to conclude the celebration of our 50th anniversary, we printed a list of *every single editor* since our founding January of 1973. Turns out our records were wrong for one or two terms. This list is reprinted on the following page with corrections made, and with the editors from the past year included too.

Here's hoping our records are correct this time around—I don't want to be responsible for **mathNEWS** blowing even more of its budget printing this thing again next year.

evaluatED

THE EDITORS OF mathNEWS

THE UNIVERSITY OF WATERLOO'S BASTION OF ERUDITE THOUGHT SINCE 1973

mathNEWS has been published each academic term since January of 1973. It is the duty of the mathNEWS Editor to ensure that mathNEWS continues forever. Here are those who have volunteered themselves to carry out this task:

VOL. TERM EDITORS

| | | | | | | | | |
|----|-----|--|----|-----|---|-----|-----|---|
| 1 | W73 | John Peebles, Steve Treadwell | 49 | W89 | Rick McTavish | 88 | W02 | Albert "PhatEd" O'Connor, Bradley Theodore "TaxiEd" Smith |
| 2 | S73 | Marsha Tatebe | 50 | S89 | Stephen A. Smith | 89 | S02 | Albert "PhatEd" O'Connor, Bradley Theodore "TaxiEd" Smith |
| 3 | F73 | John Peebles | 51 | F89 | Don Marks, Karen Louise Smith | 90 | F02 | Louis "FrenchEd" Mastorakos, Albert "PhatEd" O'Connor, Bradley Theodore "TaxiEd" Smith, Chris "KreasEd" Harasemchuk |
| 4 | W74 | John Peebles | 52 | W90 | Paul J. Sahota, David Weil | 91 | W03 | Louis "FrenchEd" Mastorakos, Chris "KreasEd" Harasemchuk |
| 5 | S74 | Dennis Mullin | 53 | S90 | Rob Del Mundo, Karen Louise Smith | 92 | S03 | Louis "FrenchEd" Mastorakos, Chris "KreasEd" Harasemchuk, Ian W. "iEd" MacKinnon |
| 6 | F74 | Randall McDougall | 54 | F90 | Trevor Green | 93 | F03 | Louis "FrenchEd" Mastorakos, Chris "KreasEd" Harasemchuk, Ian W. "iEd" MacKinnon, Emerald "StatsEd" Kushnier |
| 7 | W75 | Dennis Mullin | 55 | W91 | Mike Reade, Rob Del Mundo, Betty-Jo Hill | 94 | W04 | Chris "KreasEd" Harasemchuk, Louis "FrenchEd" Mastorakos |
| 8 | S75 | Randall McDougall | 56 | S91 | Marcel Goudeseune | 95 | S04 | Mark "BeatleEd" Toivanen, Chris "KreasEd" Harasemchuk, Louis "FrenchEd" Mastorakos |
| 9 | F75 | Dennis Mullin | 57 | F91 | Mike Reade, Betty-Jo Hill | 96 | F04 | Eric "inkEd" Logan, Emerald "StatsEd" Kushnier |
| 10 | W76 | Randall McDougall, Mark Brader | 58 | W92 | Curtis Desjardins | 97 | W05 | Mark "BeatleEd" Toivanen, Emerald "StatsEd" Kushnier, Chris "SheepNinEd" MacGregor |
| 11 | S76 | Ron Hipfner | 59 | S92 | Betty-Jo Hill, Christina Caldarelli | 98 | S05 | Eric "inkEd" Logan, Ian W. "iEd" MacKinnon, Jenn "DirtyEd" Smith |
| 12 | F76 | Michael Dillon, Mark Brader | 60 | F92 | Kivi Shapiro | 99 | F05 | Mark "BeatleEd" Toivanen, Emerald "StatsEd" Kushnier, Chris "SheepNinEd" MacGregor, Eric "inkEd" Logan |
| 13 | W77 | Mark Brader, Michael Dillon, Ron Hipfner, Randall McDougall, Dennis Mullin | 61 | W93 | Christina Caldarelli, Erich Jacoby | 100 | W06 | Ian W. "iEd" MacKinnon, Jenn "DirtyEd" Smith |
| 14 | S77 | Dennis Mullin, Bruce Mills | 62 | S93 | Ian Goldberg | 101 | S06 | Chris "SheepNinEd" MacGregor, Emerald "StatsEd" Kushnier |
| 15 | F77 | Dennis Mullin | 63 | F93 | Curtis Desjardins, Erich Jacoby | 102 | F06 | Eric "inkEd" Logan, Jenn "DirtyEd" Smith |
| 16 | W78 | Will Macauley, Dave Gillett | 64 | W94 | Michael Melvin, Steve "Flip" Shaw | 103 | W07 | Emerald "StatsEd" Kushnier |
| 17 | S78 | John J. Long, John Ellis | 65 | S94 | Erich Jacoby, Dale Wick | 104 | S07 | Michael "perkiED" Perki, Michaelangelo "AngelED" Finistauri |
| 18 | F78 | Prabhakar Ragde | 66 | F94 | Steve "Flip" Shaw | 105 | F07 | Peter "mossED" Simonyi |
| 19 | W79 | Andrew Malton | 67 | W95 | Mala "Crakko" Krishnan, Mike "Hammer" Hammond | 106 | W08 | Michael "perkiED" Perki, Michaelangelo "AngelED" Finistauri |
| 20 | S79 | Prabhakar Ragde (Eclectia) | 68 | S95 | Stephen Johnston, Stuart "Jean-GuyEd" Pollock | 107 | S08 | Michaelangelo "AngelED" Finistauri |
| 21 | F79 | W. Ross Brown | 69 | F95 | Mala "Crakko" Krishnan, Mike "Hammer" Hammond | 108 | F08 | Michael "perkiED" Perki |
| 22 | W80 | Rob Collins | 70 | W96 | Mala "Crakko" Krishnan, Mike "Hammer" Hammond, Brian "Latrell" Fox | 109 | W09 | Joe "InsideED" Collins |
| 23 | S80 | W. Ross Brown | 71 | S96 | Mala "Crakko" Krishnan | 110 | S09 | John "ImpulsED" Baxter, Rami "RamED" Finkelshtein, John "StaticED" Stevenson |
| 24 | F80 | W. Ross Brown, Joanne West | 72 | F96 | Matt "So-Krates" Walsh, Brian "Latrell" Fox | 111 | F09 | Emily "CorruptED" Bain, Joe "InsideED" Collins, John "ImpulsED" Baxter |
| 25 | W81 | Joanne West | 73 | W97 | Brian "Latrell" Fox | 112 | W10 | John "ImpulsED" Baxter, John "StaticED" Stevenson, Rami "RamED" Finkelshtein |
| 26 | S81 | William Hughes | 74 | S97 | Matt "So-Krates" Walsh, Brian "Latrell" Fox | | | |
| 27 | F81 | Dave Till | 75 | F97 | Brian "Latrell" Fox, Chadwick "CasEd" Severn | | | |
| 28 | W82 | Dave Till | 76 | W98 | Matt "So-Krates" Walsh | | | |
| 29 | S82 | W. Jim Jordan | 77 | S98 | Chadwick "CasEd" Severn | | | |
| 30 | F82 | Dave Graham | 78 | F98 | Matt "So-Krates" Walsh, Brian "Latrell" Fox, Richard Bilson | | | |
| 31 | W83 | Dave Leibold, Mark L. Kahnt | 79 | W99 | Matt "So-Krates" Walsh, Gregory "hologrami" Taylor, Chadwick "CasEd" Severn | | | |
| 32 | S83 | Cary Timar | 80 | S99 | Chadwick "CasEd" Severn, Gregory "hologrami" Taylor, Matt "So-Krates" Walsh, Richard Bilson | | | |
| 33 | F83 | Tom "Watts" Haapanen, Glenn McFarlane | 81 | F99 | Gregory "hologrami" Taylor | | | |
| 34 | W84 | Tom "Watts" Haapanen | 82 | W00 | Gregory "hologrami" Taylor, Chadwick "CasEd" Severn, Richard Bilson | | | |
| 35 | S84 | Tom Ivey | 83 | S00 | Chadwick "CasEd" Severn | | | |
| 36 | F84 | Cary Timar | 84 | F00 | Gregory "hologrami" Taylor, Richard Bilson | | | |
| 37 | W85 | Tom Ivey | 85 | W01 | Peter Lizak, Bradley Theodore "TaxiEd" Smith | | | |
| 38 | S85 | dan schnabel | 86 | S01 | Peter Lizak, Bradley Theodore "TaxiEd" Smith | | | |
| 39 | F85 | Richard Kuzell | 87 | F01 | Peter Lizak, Bradley Theodore "TaxiEd" Smith | | | |
| 40 | W86 | dan schnabel | | | | | | |
| 41 | S86 | Stuart L. Hodgins | | | | | | |
| 42 | F86 | Paul D. Obeda | | | | | | |
| 43 | W87 | dan schnabel | | | | | | |
| 44 | S87 | W. Jim Jordan | | | | | | |
| 45 | F87 | Stuart L. Hodgins, Frank Letniowski | | | | | | |
| 46 | W88 | Tom Vandelloo | | | | | | |
| 47 | S88 | Rick McTavish | | | | | | |
| 48 | F88 | Tom Vandelloo | | | | | | |

- 113 S10 Will “FuzzyED” Hughes,
H. P. “GroovyED” Gross,
Emily “CorruptED” Bain
- 114 F10 Emily “CorruptED” Bain,
John “StaticED” Stevenson,
John “ImpulsED” Baxter,
Rami “RamED” Finkelshtein,
H. P. “GroovyED” Gross
- 115 W11 H. P. “GroovyED” Gross,
Will “FuzzyED” Hughes
- 116 S11 Emily “CorruptED” Bain,
H. P. “GroovyED” Gross,
Will “ConcealED” Morrison,
Sacha “!ED” Koohgoli,
Michelle “CowED” Conway
- 117 F11 H. P. “GroovyED” Gross,
Will “FuzzyED” Hughes,
Sacha “!ED” Koohgoli,
Murphy “ScruffyED” Berzish,
Michelle “CowED” Conway
- 118 W12 Will “ConcealED” Morrison,
Sacha “!ED” Koohgoli,
Murphy “ScruffyED” Berzish,
Michelle “CowED” Conway
- 119 S12 Will “ConcealED” Morrison,
Murphy “ScruffyED” Berzish,
Lenny “ObjectED” Morayniss
- 120 F12 Will “ConcealED” Morrison,
Sacha “!ED” Koohgoli,
Lenny “ObjectED” Morayniss
- 121 W13 Julie “GingerbrED” Sturgeon,
Sacha “!ED” Koohgoli,
Lenny “ObjectED” Morayniss,
Murphy “ScruffyED” Berzish
- 122 S13 Julie “GingerbrED” Sturgeon,
Lenny “ObjectED” Morayniss,
Murphy “ScruffyED” Berzish,
Rachel “MuffinED” Wiens
- 123 F13 Lenny “ObjectED” Morayniss,
Murphy “ScruffyED” Berzish,
Thomas “ConvolutED” Baxter
- 124 W14 Murphy “ScruffyED” Berzish,
Julie “GingerbrED” Sturgeon,
Rachel “MuffinED” Wiens
- 125 S14 Katherine “bunniED” Tu,
Murphy “ScruffyED” Berzish,
Rachel “MuffinED” Wiens
- 126 F14 Katherine “bunniED” Tu,
Amy “DictatED” Li,
Rachel “MuffinED” Wiens,
Jose-Miguel “SketchED” Velasco,
Elizabeth “WibbledED” Liu
- 127 W15 Katherine “bunniED” Tu,
Julie “GingerbrED” Sturgeon,
Jose-Miguel “SketchED” Velasco
- 128 S15 Katherine “bunniED” Tu,
Julie “GingerbrED” Sturgeon,
Amy “DictatED” Li,
Elizabeth “WibbledED” Liu,
Thomas “ConvolutED” Baxter
- 129 F15 Katherine “bunniED” Tu,
Thomas “ConvolutED” Baxter,
Jose-Miguel “SketchED” Velasco,
Zishen “quizED” Qu
- 130 W16 Katherine “bunniED” Tu,
Amy “DictatED” Li,
Jose-Miguel “SketchED” Velasco,
Elizabeth “WibbledED” Liu,
George Lambrou
- 131 S16 Katherine “bunniED” Tu,
Zishen “quizED” Qu
- 132 F16 Thomas “ConvolutED” Baxter,
Katherine “bunniED” Tu,
Amy “DictatED” Li,
Shaundalee “undecidedED” Carvalho
- 133 W17 George Lambrou,
Angela “ExtrovertED” Le,
Heather “tbdED” Stonehouse,
Min “itorED” Zhu
- 134 S17 Cameron “TurnipHED” Roach,
Heather “tbdED” Stonehouse,
Shaundalee “undecidedED” Carvalho
- 135 F17 Cameron “TurnipHED” Roach,
Heather “tbdED” Stonehouse,
Min “itorED” Zhu,
Angela “ExtrovertED” Le,
Shaundalee “undecidedED” Carvalho
- 136 W18 Angela “ExtrovertED” Le,
George Lambrou,
Zishen “quizED” Qu,
Anuj “swindlED” Opal
- 137 S18 Esther “stapLED” Ahn,
Heather “tbdED” Stonehouse,
Min “itorED” Zhu,
Anuj “swindlED” Opal,
Clyde “yclypED” Brown
- 138 F18 Esther “stapLED” Ahn,
Anuj “swindlED” Opal,
Clyde “yclypED” Brown,
Jamie “confusED” Anderson,
Noshewan “over-engineerED”
Ahmed
- 139 W19 Esther “stapLED” Ahn,
Terry “terrifiedED” Chen,
Min “itorED” Zhu,
Jamie “confusED” Anderson
- 140 S19 Esther “stapLED” Ahn,
Terry “terrifiedED” Chen,
Anuj “swindlED” Opal,
Josh “unsophisticatED” Rampersad
- 141 F19 Terry “terrifiedED” Chen,
Jamie “confusED” Anderson,
Clara “clarifiedED” Xi,
Josh “unsophisticatED” Rampersad
- 142 W20 Terry “terrifiedED” Chen,
Jamie “confusED” Anderson,
Anuj “swindlED” Opal,
Min “itorED” Zhu
- 143 S20 Clara “clarifiedED” Xi,
Jamie “confusED” Anderson,
Kevin “god $\not\leq$ peED” Trieu,
Josh “unsophisticatED” Rampersad
- 144 F20 Clara “clarifiedED” Xi,
Jamie “confusED” Anderson,
Terry “terrifiedED” Chen,
George Lambrou
- 145 W21 Clara “clarifiedED” Xi,
Kevin “god $\not\leq$ peED” Trieu,
Naman “caffeinatED” Sood
- 146 S21 Clara “clarifiedED” Xi,
Kevin “god $\not\leq$ peED” Trieu,
Terry “terrifiedED” Chen,
Yang “bipED” Zhong
- 147 F21 Clara “clarifiedED” Xi,
Kevin “god $\not\leq$ peED” Trieu,
Naman “caffeinatED” Sood,
Yang “bipED” Zhong
- 148 W22 Clara “clarifiedED” Xi,
Chen “enamouredED” Chai,
Naman “caffeinatED” Sood,
Yang “bipED” Zhong,
Terry “terrifiedED” Chen
- 149 S22 Clara “clarifiedED” Xi,
Chen “enamouredED” Chai,
Kevin “god $\not\leq$ peED” Trieu,
Yang “bipED” Zhong,
Terry “terrifiedED” Chen,
Nicky “gildED” Priebe,
Ryan “uknightED” Chow
- 150 F22 Clara “clarifiedED” Xi,
Terry “terrifiedED” Chen,
Nicky “gildED” Priebe,
Daniel “distractED” Matlin,
Ryan “uknightED” Chow
- 151 W23 Clara “clarifiedED” Xi,
Kevin “god $\not\leq$ peED” Trieu,
Evan “evaluatED” Girardin,
Daniel “distractED” Matlin,
Ryan “uknightED” Chow
- 152 S23 Evan “evaluatED” Girardin,
Daniel “distractED” Matlin,
Awab “awED” Qureshi
- 153 F23 Evan “evaluatED” Girardin,
Daniel “distractED” Matlin,
Awab “awED” Qureshi,
Naman “caffeinatED” Sood,
Isabela “classifiED” Souza
- 154 W24 Evan “evaluatED” Girardin,
Daniel “distractED” Matlin,
Awab “awED” Qureshi,
Naman “caffeinatED” Sood,
Isabela “classifiED” Souza,
Owen “befuddledED” Gallagher

**Looks like
your name
comes next.
What are you
waiting for?**

**A mathNEWS EDITOR
WHO WANTS YOU
TO GET ON WITH
IT AND APPLY**

GOODBYE TO A WORLD

gridCOMMENT 154.6

hello gamers,

welcome to the final **gridCOMMENT** submitted by me, wink wonk. it has been a wonderful time creating puzzles for you all and i hope the spirit of **gridWORD** carries on despite my leave.

last time, i asked you, "what would you do if you had an hour to live?" and you all said:

- denko: *go get something to eat. not sure where though and it might take me that long to decide :s*
- __init__: *I would compile my last words into a huge crossword or something*
- Sexy_Software_Babe: *video call my family because they're a six-hour drive away (and cancel my lease for the spring term)*
- Lars Nootbaar & aphf: *pet as many geese as possible*
- Fred: *an escape room + gridWORD*
- Coda: *Start watching an 8 hour video essay on some random show I've never actually seen. And tell my family I love them I guess.*

- morewhales & Vafflemaker: *play 1/2 of a game of Twilight Imperium: 4th Edition*
- MJ: *break every single clock. If time isn't real, then I can't die.*
- sunnynsideup: *I'd say one is truly only living when they are doing the harlem shake*
- yalevoynian: *Listen to the second movement of Ravel's Piano Concerto in G*

sunnynsideup, i'm glad you could make my final **gridWORD**, i hope you had fun with it! please collect the final prize at the **mathNEWS** office (MC 3030) when you can.

to everyone else, i'm honoured to have held the title of **gridMASTER** for so long and i believe our dear spaghettinhalers will carry on my spirit well. no matter where we are, no matter what we may be doing, we will always have the **gridWORDS** we've done together.

with that, so long, and thanks for all the **gridWORDS** :)

Wink wonk

ACROSS

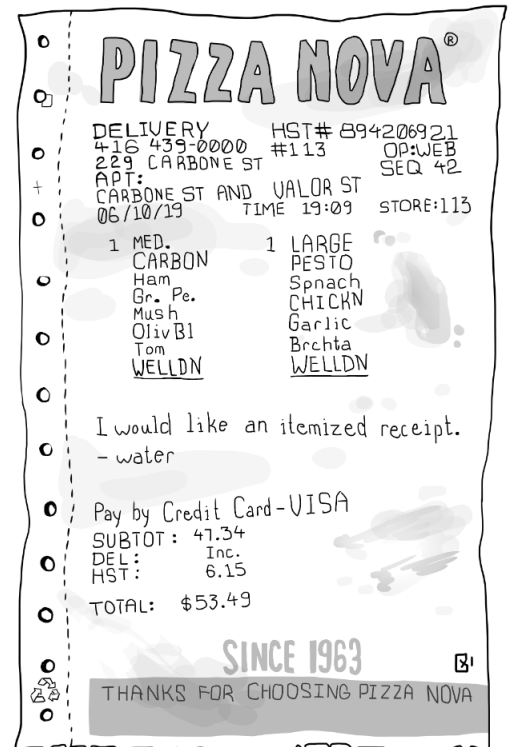
1. Same (prefix)
5. Cooked a cake
10. Previously attended school: ___ mater
14. Assert formally
15. Dextrous
16. Liquid to vapour transition
17. Space organization (abbr.)
18. Communist revolutionary
19. City on the Tiber
20. Short look
22. Enraptured
24. Jupiter and Saturn: ___ giants
25. Level
26. Entrapped
29. Hole
30. Store passageway
34. Department of Defense programming language
35. Marking indicating retained error
36. Speak previously
37. Walking irregularly
40. Title incorrectly
41. Trinidad companion
42. Creative expression
43. Famous Munich university (abbr.)
44. Circular island
45. Pressure measure (abbr.)
46. All
48. Very small amounts
50. Potassium hydroxide
51. Show-me state
54. Primate researcher
58. Simpsons character
59. Burns down
61. Refuse abruptly
62. Guide
63. Essay part (abbr.)
64. Central Asia mountain range
65. Record using VHS

66. Helmet nosepiece
67. Christian fasting period

DOWN

1. Place a picture
2. Ellipse
3. Half-Life setting: Black ___
4. Citrus fruit
5. Packages of hay
6. To mature
7. Active energy type
8. Call forth
9. Compact
10. Cut
11. Crime reward
12. Mariah Carey album: The Emancipation of ___
13. Smart ___
21. A dishonourable man
23. Animal catchers
26. Mediterranean island nation
27. Stupid person
28. First Blood protagonist
29. Type of crude iron
31. Follow the edge
32. Small primate
33. Antagonist
35. Frozen treat: ___-cone
36. Rest
38. Fortification
39. Icy home
40. Faded Sun aliens
42. Credits given for passing to the scorer
45. Brazil state and river
46. Potato bud
47. Relating to spoken qualities
49. 2006 Winter Olympics host city
50. Cleaning aid
51. Solid to liquid transition
52. Thought

53. Break
55. Cabbage type
56. Order of the Stick character
57. Short dramatic presentation
60. Eon



| | | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 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 | | | | | | 67 | | | |

Drop your gridWORD solutions off at MC 3030. And yes, we do award points for creativity.

lookAHEAD

SUN MAR 31

World Backup Day

MON APR 1

April Fools' Day

TUE APR 2

WED APR 3

World Rat Day

THU APR 4

FRI APR 5

Honor Your Local Stationery Supplier Day

SAT APR 6

SUN APR 7

National Beer Day 🍺

MON APR 8

Classes end
Travel To Niagara Or Hamilton Day

TUE APR 9

WED APR 10

Drop with WF ends

THU APR 11

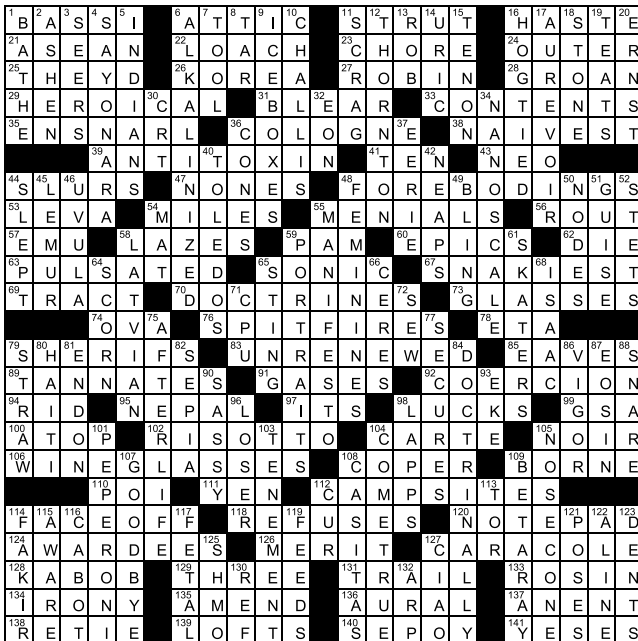
Final examinations begin
caffeinatED's dad's birthday

FRI APR 12

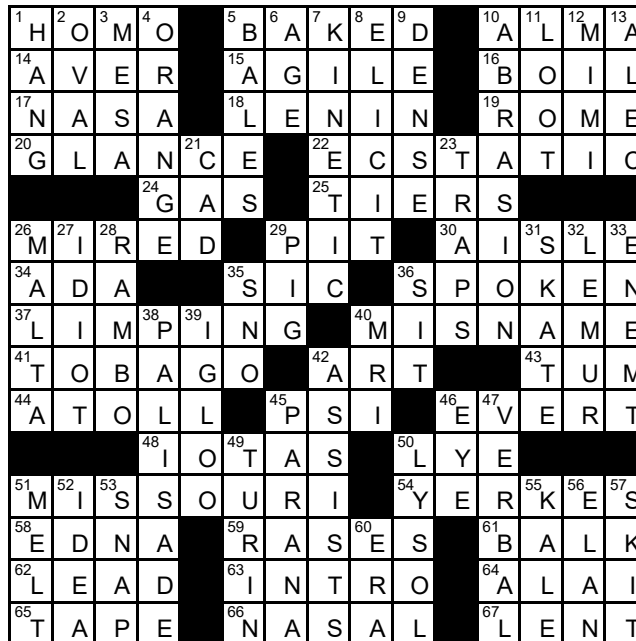
SAT APR 13

Eat Batteries Eat Batteries
Eat Batteries Eat Batteries
Eat Batteries Eat Batteries
Eat **BATTERIES EAT BATTERIES**
EAT BATTERIES EAT
BATTERIES EAT
BATTERIES YUM!

LAST ISSUE'S gridSOLUTION



THIS ISSUE'S gridSOLUTION



SAD IT'S OVER? SUBSCRIBE TODAY!

YOUR NAME

MAILING ADDRESS

W S F 20 YY W S F 20 YY W S F 20 YY

TERMS

Canada \$7.50 per term, \$20 per year
United States \$10.00 per term, \$25 per year
Overseas \$15.00 per term, \$35 per year