mathNEWS

VOLUME 152 • ISSUE 4

JULY 7, 2023

9 770705 041004

mastHEAD

"HOW ARE YOU SPENDING JULY 4TH?"

I spent this Fourth of July in the US. How appropriate for me, the American editor! Unfortunately, this was the result of me getting sick and prolonging my stay while visiting home, and so I missed my third prod night in a row. I'm pretty sure I'm going to go into Pizza Nova withdrawal soon. (For the record, I'm pretty sure I was infected in Canada, not in the US.)

I want to take a moment to talk about the events of last week. I heard about the stabbing first thing when I turned off airplane mode after my flight to the US. That night, I felt unexpectedly removed from the situation. *It wasn't near my area of campus*, I thought. *I don't know those who were attacked.*

In the next few days, it hit me like a brick. I love UWaterloo as a whole, not just the Math Faculty. I love the campus too — all of it, and it hurts to know that any part of it has been scarred by hateful violence. (And as an American, though I'm sometimes reluctant to admit this, I've long appreciated the increased sense of campus safety that comes from studying in Canada; seeing this happen where I'd least expect it to adds further pain.)

Unsurprisingly, this issue contains several articles on this topic. As it's clearly on a lot of our minds, I want to say that **anyone** reading this who's struggling with the events **in any way** should seek mental health support. I unfortunately have limited space here but there are some good resources listed here: https://uwaterloo.ca/news/prioritizing-well-being.

With recovery in mind, I'm happy to see plenty of lighthearted articles this issue as well! (I giggled most at *Slow Mathematics* and *Zen*.) And this wouldn't be a **mathNEWS** issue if it didn't have some number of recipe or review-like articles, so look forward to those, as well as a more abundant **profQUOTES** crop (the drought is over!).

Readers, enjoy the issue, and writers, I'll hopefully finally see you again next prod night!

distractED
Editor, **mathNEWS**

A COOL PEN NAME	Making love to Uncle Sam under the star spangled banner
PLATYPUSGOD	Writing a quiz
PREDAP	Proabably bugging all my American friends who are trying to enjoy their day off
BOLDBLAZER	I spend it just like any other day that is not a federal nor provincial public holiday
TENDSTOFORTYTWO	not spending it at all — it's all going straight into my TFSA
__INIT__	Wondering if the editors are deliberately placing these prod nights on holidays to save on printing costs
LWO	Thinking about how America is terrible
WARRIOR1RULES	comforting my panicking dog
MOLASSES	i'll probably spend it on some cnd bagels
NORMALPARAMETERS	doing all my assignments that coincidentally got pushed to the same day
YALEVOYLIAN	Listening to "America" from West Side Story on repeat
DICK SMITHERS	Pre-gaming my Fifth of July celebrations
YUMMYPI	Re-reading my list of CIA-backed military coups in Latin America
LABYRINTH	Enjoying April 7th :)
WINK WONK	making a new **gridWORD**
TREEE	destroying western civilization by existing as a queer person, and sucking girl dick
SKIT	sadly :(
EVALUATED	Adobe InDesign CC 2023 (Not Responding)
DISTRACTED	sick... but in the United States of America!
AWED	Rejecting — I mean, uhh, *editing* your articles!

ARTICLE OF THE ISSUE

Did you know Conestoga Mall got bought out by another company? And they're killing the old gift cards in two years. Crazy, right? Anyway, articles — lots of good ones this issue. This time, article of the issue goes to Skit for *it's all people can talk about*. Come to the office to claim your $25 prize! And make sure to spend it before July 2025, I guess.

evaluatED
Editor, **mathNEWS**

I didn't expect there to be empty space here, so, uh, don't mind me writing a fake postscript as an easy way out so I can go eat.

The Spider-Man 2 pizza mission music is stuck in my head thanks to god ⚡ peED showing it to me last term.

DANIEL MATLIN, mathNEWS EDITOR FOR SPRING 2023
ALONG WITH EVAN GIRARDIN AND AWAB QURESHI

mathASKS 152.4

FEATURING PROFESSOR SPIRO KARIGIANNIS

NOTRAYMO: ELI5, WHAT ARE DIFFERENTIAL GEOMETRY AND GEOMETRIC ANALYSIS?

Since this is such a great question, I will give you a great answer.

The word "geometry" literally is Greek (I should know) for "measuring the earth". It is the oldest science and the oldest branch of mathematics. Broadly speaking, it is the study of the structure of a "space" equipped with a notion of "distance" between points. In classical (Euclidean) geometry, the space is just a 2-dimensional (or 3-dimensional) real vector space, equipped with a positive definite inner product (although this is certainly not how the ancient Greeks thought of it). This of course generalizes to any dimension, and while there are some interesting things that one can say about this situation, it is not that exciting, because the geometry basically "looks the same" at every point and in every direction. This is encoded in the fact that the inner product is "constant" in some sense. So if we want to study more interesting situations, we need to allow things to *change*—if the world didn't change, it would be very boring indeed. And of course, if things are changing in a sufficiently "smooth" way, we are doing *calculus*. Differential geometry is the study of "spaces" equipped with "smoothly varying" notions of distance and inner product. Strictly speaking, what I have just non-rigorously defined is *Riemannian* geometry, which is just a subset of differential geometry.

To get more precise, let's start with some basics. Before we can talk about "differentiability", we need to understand "continuity". The right setting to make sense of continuity is topology. A topological space is a space on which it makes sense to define continuous functions, or more generally continuous maps between topological spaces. Our good friend $\mathbb{R}^n$ with the standard metric space structure induced from the Euclidean inner product is just one example. All we need to understand "continuity" is some notion of "closeness", so no linear (vector space) structure is really needed. But if we want to be able to *differentiate* objects, we need to take a limit of a *difference quotient*. To make sense of this, it seems that we need a vector space structure. This is almost true, but we can get away with something that is *almost* a vector space, as I will now valiantly endeavour to explain. In kindergarten, we learn about the simplest spaces (vector spaces) and the simplest maps between them (linear maps). In elementary school, we decide to get a bit crazy, and consider *nonlinear* maps between linear spaces, as long as these are reasonably well-behaved. Here, "reasonable" means differentiable so that, near a given point, such maps are well-approximated by linear maps. Then in high school we go completely nuts, and consider nonlinear maps between *nonlinear spaces*. What could this even mean? Since we are doing calculus, the key is *linear approximation*. We want our "nonlinear spaces" to be be well-approximated by linear spaces, near a given point. This is the notion of a manifold. An n-manifold is a topological space that "looks like" $\mathbb{R}^n$ near each point. A smooth map between an n-manifold and and m-manifold "looks like" a linear map from $\mathbb{R}^n$ to $\mathbb{R}^m$ near each point. Smooth manifolds are the most general spaces on which is makes sense to do calculus. This is the subject of PMATH 465, which you should all take. It's awesome.

But wait, there's more. Let M be an n-manifold. At each point $p \in M$, we have a "tangent space" T_pM, which is an n-dimensional real vector space approximating M in some sense. Abstractly, this is of course isomorphic to $\mathbb{R}^n$, but not canonically. (That is, there is no preferred basis.) Also, there is no preferred inner product on T_pM. A choice of "smoothly varying" inner product on all the tangent spaces of M is a *Riemannian metric* on M. It turns out such a metric always exists, but there are uncountably many such metrics, and no preferred choice on a random manifold. (If $M = \mathbb{R}^n$ then there is a preferred choice, the one from Ancient Greece, but there are uncountably many here too.) A natural question is, "what is the "best" Riemannian metric on a given manifold M?" The answer, of course, depends on what we mean by "best". This is where we start to get into *geometric analysis*. I'll explain that very soon, but bear with me a bit longer. (Hopefully you're all still reading this!) More generally than a Riemannian metric, we can consider "geometric structures" on any manifold M as follows. Whenever there's an algebraic structure that can exist on a vector space, we can try to "attach" such a structure to each tangent space T_pM of M in a "smoothly varying way". Depending on the structure, this may or may not always be possible. There may be "global topological obstructions." From inner products on vector spaces, we get Riemannian metrics, and this can always be done, which is not obvious. From orientations on vector spaces, we get manifold orientations. This *cannot* always be done (Google the Möbius strip or the Klein bottle, for example). And things get much more exotic than that, such as almost complex structures or G_2 structures, but I am rambling.

Now suppose you have a manifold M that admits a certain type of "geometric structure". If it does, it usually admits infinitely many. What is the best one? In most situations, the natural notion of "best" is characterized by that structure satisfying a natural (usually nonlinear) partial differential equation on the manifold. So even if M admits a certain type of geometric structure, it may not have a "best" one, because that geometric PDE may not have a solution. To be able to answer such questions, one uses the tools of functional analysis and partial differential equations in the setting of Riemannian geometry. So to do geometric analysis, you really need to know a bit about everything, and a lot about certain things, but that's why it's so interesting! I can go on and say much more, but you're probably already regretting asking me this question!

MOLASSES: AS A TOPOLOGIST, WHAT IS YOUR OPINION ON THE TOPOGRAPHY OF THE WATERLOO REGION?

Since I am not actually a topologist, perhaps I should not answer this question. But I will. If I *were* a topologist, the topography of Waterloo would be uninteresting, because topology is only concerned with structure up to continuous deformation, and the topography of Waterloo region (or any other region) is homeomorphic to a flat space. As a geometer, I care about lengths, distances, and curvatures. So the question is more meaningful. Sadly, Waterloo is (even geometrically) quite flat. It's not that interesting topographically. Except maybe for Elora Gorge. If you haven't been there, it's worth the trip.

BOLDBLAZER: WHAT DO YOU THINK OF THE TOPICS IN PMATH 340? WHAT ABOUT PMATH 333?

I've never taught PMATH 340, and I certainly never will, since I don't even know what quadratic reciprocity is. I can't really work well with numbers. Thankfully we now have machines that calculate the restaurant tip for me, because I can't do the arithmetic myself. I haven't yet taught PMATH 333, but I will actually teach it for the first time in Fall 2023. It's a course designed to get people ready for PMATH 351 if they did not take MATH 247 (which I've taught at least five or six times, and which I will also teach again in Fall 2023.) That material in 333, or 247, or 351, is certainly very cool, and you can't do geometry without it, but of course it's not as cool as geometry. Nothing is, except maybe German shepherds.

LABYRINTH: WHAT GOT YOU INTERESTED IN DIFFERENTIAL GEOMETRY AND GEOMETRIC ANALYSIS, AND WHAT'S YOUR FAVOURITE THING ABOUT YOUR RESEARCH?

This might be true of most mathematicians, but I am especially attracted to patterns. More specifically, the (mathematical) thing that really turns me on is when we find a structure that is very closely related to a previously well-understood structure, but also has some differences in subtle but important ways. For example (and this example is really fundamental), there are many similarities between real numbers and complex numbers. They are both fields, and are also real vector spaces equipped with natural norms which are compatible with the field multiplication. That is, $|ab| = |a|\,|b|$ for any a, b. But the real numbers are naturally ordered, while the complex numbers are not. There exists another such structure which is very similar, namely the quaternions, $\mathbb{H}$, which are a 4-dimensional real vector space equipped with a multiplication that makes them *almost* a field, they are just non-commutative. And their multiplication is compatible with the norm as for $\mathbb{R}$ or $\mathbb{C}$. In fact, there is exactly only one other such "real normed division algebra", called the *octonions* $\mathbb{O}$, which are not only non-commutative, but also *non-associative*. This makes them more complicated (but at the same time much more interesting) than $\mathbb{R}$, $\mathbb{C}$, or $\mathbb{H}$. The special structure of the octonions in 8-dimensions induces a special "cross product" operation on $\mathbb{R}^7$, thought of as the orthogonal complement of the identity element in $\mathbb{O}$. This is almost exactly the same as the cross product on $\mathbb{R}^3$ that we all learned about in first grade, except that the non-associativity introduces some complications. My research studies 7-dimensional and 8-dimensional manifolds that essentially have these special algebraic structures on each of their tangent spaces, in a smoothly varying way. These spaces are of potential application in theoretical physics, which is cool, but I would find them extremely interesting regardless. The amazing thing about geometric analysis, as I hinted at above in the first question, is that it mixes together algebra, topology, analysis, and geometry in a really beautiful way. In fact, the crowning achievement of 20$^{\text{th}}$ century mathematics is widely considered to be the Atiyah-Singer Index Theorem, which describes an incredible marriage between all four of these players (mathematical polygamy is fine and to be encouraged). In hindsight, the fact that I was interested in things which were "very similar, but only slightly different" was evident from my childhood. I remember being very young and being enthralled by a McDonald's marketing campaign that featured *two* of that creepy-looking blob guy Grimace, the traditional purple Grimace and a super-cool *green Grimace*. That blew my 5-year old mind. True story.

JEFF: WHAT IS YOUR FAVOURITE BATHROOM ON CAMPUS?

If only there were a decent bathroom on campus. I don't understand why the University administration is so cheap as to stock all the bathrooms with what is essentially *negative ply* toilet paper. Best to bring your own or go at home.

BOLDBLAZER: DO YOU HAVE A PREFERRED RESTAURANT AT THE UNIVERSITY PLAZA?

If I have to choose something in the Plaza, then I choose Harvey's just because I've been a Harvey's customer since I was a kid in Montréal. But the best restaurant in the Waterloo region is Urwa's, a Pakistani restaurant near the *other* Harvey's, at King and Weber. You should try their Lahori Chana. It is awesome. Just like PMATH 465, only spicier. (I am not getting kickbacks from Urwa's, but I would gladly accept them.)

AUTUMN: WHAT'S YOUR FAVOURITE SEASON?

Ironically, Autumn, my favourite season is Fall. My favourite time is when it starts to cool off and the leaves fall down. It puts me (perhaps weirdly) in the mindset of starting a new chapter of life. This made sense when I would start a new school year every September, but makes less sense since I stopped being a student. It also makes less sense because September is the new August. That is, the feeling I would get from the September weather when I was a kid in the 80's doesn't happen until October now. We've really messed up the climate on this planet. We may have to find a new one if we can't get our act together.

BOLDBLAZER: WHAT COLOUR CREWMATE WOULD YOU CHOOSE IN AMONG US?

I've never played this game, although I have watched my daughter play it. I can't say that it looks exciting. Certainly not anywhere near as cool as that monumental classic of 1983

Apple II games, "Canyon Climber" (Google it). Although I should add that I used to be *really good* at the triple jump on the Nintendo Entertainment System. There was a trick to that. But, since you asked me about my favourite colour (although you actually didn't), my favourite colour is purple. Probably because I'm a big fan of the artist formerly known as his royal purpleness. May he rest in peace.

PSYCHGIRL: WHAT SUGGESTIONS DO YOU HAVE FOR MATH STUDENTS WHO ARE SOON TO GRADUATE? WHAT GENERAL ADVICE DO YOU HAVE FOR STUDENTS ABOUT LIFE OUTSIDE OF UNIVERSITY AND ACADEMIA?

The great thing now is that there are so many options to actually *do math* outside of academia. That didn't used to be the case. Until about 2000, if you had a degree in math and didn't stay in academia, you either ended up teaching math at the pre-university level (a very fine and noble profession, and we need more good people doing that!) or you went to Wall Street to work in financial consulting, with zero knowledge of what that means, and probably as a result helped cause the financial crisis of 2008 (I know several people who took this path). But now, there are so many jobs in private industry where you actually need to do non-trivial *math*. I had a postdoc here who went to San Francisco to work in the computer game industry, and he's actually doing Riemannian geometry. It's not just coding. Having given you this fantastic news, I do admit that I am not closely connected to these opportunities, I just know that they exist. So if this kind of thing appeals to you then I encourage you to seek out faculty members who may have such connections, to learn more.

If you want to continue in math, that's great. Math is awesome. But, to quote the infamous Qui-Gon Jinn, it's a hard life. Each year I learn as much new math as I did in the previous several years. Most of the math I know I learned after my PhD and after 5.5 years of postdoc (that is, in the 14 years since I have been at Waterloo). You never really stop learning, nor should you. In fact, this is probably good advice for anyone in any kind of profession: never stop learning. Since you asked for general advice, here are some pearls of wisdom I have attained through many trials and just as many errors:

0. Never stop learning.
1. You actually learn the most from the mistakes you make, not from things you do right the first time. Think about your past courses. You almost certainly understand something better if you *initially* didn't understand it and had to work hard to get it. So don't be afraid to make mistakes. That's how we grow.
2. Related to (1) above, the best way to understand something is to try to *teach* it to someone else. See also the next question below.
3. Sleep is very important. All-nighters don't work. Trust me, I tried. I learned the hard way. The body needs sleep. That being said, you will probably all have to learn this lesson on your own, if you haven't already.
4. The mind also needs a break often. Trying to do math (or anything else) for several hours without stopping is not good for you. Take a step away. Go for a walk. Watch something stupid on TV. Read something light and fluffy. Just as you wouldn't exercise your heart or your biceps without taking a break, the same is true for the brain.

JEFF: WHAT'S A GRAD-LEVEL COURSE YOU'D LIKE TO OFFER WHICH HASN'T BEEN OFFERED YET?

I have really had the great pleasure to teach *many* graduate-level special topics courses at Waterloo, probably averaging about one every 2.5 years or even slightly more. I almost always choose a topic which is something that I really don't know that well but would like to know much better. That's why I taught courses on the "Atiyah-Singer Index Theorem" and on "Clifford algebras and spinors". Another reason to teach a topics course is to organize the material better in my head, for an eventual book. I taught the first three iterations of PMATH 868: Connections and Riemannian Geometry, and have produced about ⅔ of an eventual book. Hopefully it will be done in the next two years. Probably the next topics course I teach (maybe in 2024–2025, because I am on sabbatical in early 2024) will be on harmonic maps, as I have lately become very interested in these objects in my own research but don't know enough about them. Other topics I am interested in teaching one day are: Einstein metrics, geometric flows, and symmetric spaces. Again, all things I wish I knew better, and if I did, I would produce better and more interesting research. So I will teach these at some point in the coming decade (see items 0 and 2 in the question above).

GEOMETER: FAVOURITE GEOMETRY RESULT?

I've already mentioned the Atiyah-Singer Index Theorem, which is truly incredible. But, to choose something more specific to geometric analysis, I would have to say the Calabi-Yau Theorem. This was really the spark that ignited the fire which was to become geometric analysis. My former PhD supervisor (and Fields Medalist) Shing-Tung Yau proved this theorem in the mid-1970's, when it was known as the "Calabi conjecture". The simplest version of this theorem says that if M is a compact Kähler manifold, then it admits a unique Ricci-flat Kähler metric in each Kähler cohomology class if and only if its first Chern class vanishes. That's quite a mouthful, I know. I encourage you to read his popular science book "The Shape of Inner Space" which attempts to explain this to a general audience. It's really quite well-written. He's not paying me to say that, honest.

Green Grimace blew my 5-year old mind.

PROF. SPIRO KARIGIANNIS

THAT'S GONNA LEAVE A MARK

profTHOUGHTS *152.4*

I was asked to submit a **profTHOUGHTS** article for this issue, about *any* topic of my choosing. I thought about it a bit, since it *is* called "**profTHOUGHTS**". I could have told you some cool mathematics, but I did some of that in the **mathASKS** article, so hopefully that (mathematically) aroused you enough to take an infinite number of PMATH courses.

Instead, I opted to share with you just a few things that I have heard in my life (from various sources) that have left a lasting impression on me or have been formative in my development in different ways. You can choose to waste your time tracking them down and wondering what meaning they have for me, or you can choose to ignore them. You should probably ignore them, unless you're really bored. Here they are, in no discernibly meaningful order:

- It looks like I picked the wrong week to quit sniffing glue.
- What I told you was true. From a certain point of view.
- You idiot, you've broken my pointing stick!
- It's not the years, honey, it's the mileage.
- Who are three people who have never been in my kitchen?
- No, go past this part. In fact, never play this again.
- The representational tonality of the painting is totally at odds with the vertical extension and harmonious solidity of the vase.
- I don't believe in the no-win scenario.
- Aristotle was not Belgian.
- Don't insult me, my friend. Remember who you're talking to. No one's a bigger idiot than me.
- Once, I thought I was wrong. But I was mistaken.
- I wasn't even supposed to be here today!

Prof. Spiro Karigiannis

DEATH OF THE INTERNET

We're approaching the endpoint of the Internet as it was. It feels a strange thing to say; the Internet's an institution with clear utility to many. But it's true. Everything ends, and so, too, must the Internet that we've all grown used to.

First, the so-called "front page of the Internet", Reddit. Its lifeblood is its moderators: experts on various topics who can build communities to match the needs of similar experts or newcomers. And Reddit's upset them all by making most automated tools completely uneconomical, including the ones used to make moderation tolerable. Moderators are volunteers, and the fact that Reddit's been able to corral these volunteers to build their platform has always been the resource that's made it successful. But now, moderators are revolting, closing their communities, and Reddit's having to replace them, in the process losing the goodwill of much of their userbase. It's really frustrating, especially since Reddit consists of much of the easiest places to find solid information on the Internet where nobody's trying to sell you anything. If Reddit goes down, so does all of that.

And then, of course, there's Twitter, the place where all of Elon Musk's insecurities and weaknesses have become painfully obvious. A site that recently limited the amount of Tweets its users could view, which may or may not be the result of the company not being able to pay its bills, despite Musk doing everything he can to pretend otherwise and that this is a perfectly normal business decision. He's desperately chasing a subscription revenue model that the majority of Twitter users will never support, and it's leading to the downfall of the site that he basically purchased by accident. Yet another titan of the Internet brought down through the pursuit of eternal profit growth, the place where so much of public life on the Internet has gone down the past fifteen years. Yet another major resource in jeopardy.

And beyond that? Well, beyond that, there isn't much. That's really the problem with the modern Internet; everything got consolidated into under a dozen sites that everyone uses all the time, bleeding out any level of personality or intimacy in favour of these corporatized sites.

Even the news sites remaining seem to be running out of steam, firing writers left and right as it's clear that there just isn't any money left in writing on the Internet, now that we've been conditioned to expect it for free. Writers are being replaced with chatbots, articles posted solely for search engine optimization and not for information, optimization churning whatever few cents they can find from advertisers' pockets.

It just feels like everything deserving of love about the Internet is slowly being sapped away (shoutout to potentially my favourite game of all time, Blaseball, getting taken down last month). I don't think the Internet's going to die completely, but it's getting weaker, losing its power.

I hope we can make something better out of the ashes. I just don't know what it would be.

Predap

BLACK RASPBERRY SCONES FOR WILD RASPBERRY SEASON

It's July, you know what that means! The ticks have firmly entrenched themselves in the grass, eager to spread more Lyme than a scurvy-conscious pirate captain. The children, released from school confinement, begin to swarm many of the previously quiet and peaceful areas. The sun, which has set later and later as the year has progressed, is now starting to set earlier and earlier, foreshadowing the cold winter to come. Also, it's wild raspberry season!

Black raspberries (not blackberries!) are one of the most common wild raspberries you can find in this part of Ontario. They are both tasty and easy to both find and identify. Wild black raspberries grow in bushes with white stems and serrated leaves in clusters of three to five, as pictured below. The plants contain many spikes, which is an important thing to consider when picking them. The berries start to fully ripen in early July. They first appear red, resembling normal strawberries, then turn a deep black-purple, denoting their ripeness. One way to tell if a berry is ripe or not is to tug on it. If it comes off easily, it is ripe, if you need to apply force, it is not.

WILD RASPBERRY PLANT

Wild raspberries like to grow on the edges between forests and fields, making them easy to spot and access. I've come across plants this year between the trees and grass in Waterloo Park, the fields on campus surrounding Laurel Creek, and along the main trail of the UWaterloo Environmental Reserve. While black raspberries can be quite enjoyable to eat on their own, they are a little more tart, seed heavy and dry than traditional store-bought raspberries. I find that they make a great fruit to make scones with. So without further ado I present my raspberry scone recipe, an internet article from a defunct Wordpress page passed down through generations of my family [1].

INGREDIENTS

- 2 cups flour
- 3 teaspoons baking powder
- ½ teaspoon salt
- 2 tablespoons sugar
- 4 tablespoons butter, softened in microwave
- 1 large egg
- ½ cup milk
- 1 cup fresh black raspberries

RECIPE

1. Preheat the oven to 400˚F. Line two baking trays with silicone or parchment paper.
2. Combine the flour, baking powder, salt and sugar in a large bowl. Add the butter and rub together until you have a coarse, breadcrumb-like mixture.
3. Mix together the egg and half of the milk. Using a fork, stir into the dry ingredients until the mixture starts to form a dough. Add half of the remaining milk and most of the black raspberries. Stir gently so as to create a dough without breaking most of the black raspberries. Add more milk if needed to form a sticky dough.
4. Turn the dough out onto a floured surface and using your hands, pat it until it is about ¾ inch or 2 cm thickness. Using a small wineglass or cup (1–½ inch or 4 cm in diameter), cut out scones from the dough and place on the prepared baking trays. Bring the dough scraps together and continue until you have used all the dough. Add remaining raspberries to the top of the scones. You should have about 20 scones. Brush the tops with the remaining milk and bake in the oven for 8 to 10 minutes or until golden on top and bottom and cooked through. Transfer to a wire rack to cool. Store in an airtight container. and serve with butter or the jam.

Lars Nootbaar

1. Adapted from: https://web.archive.org/web/20200717151929/http://sarahsharratt.com/recipe/redcurrant-scones-recipe/

HELP I CAN'T FOCUS

Oh no, I have a PD thing due tomorrow (and I mean I have late days, however those things work) but I just haven't been able to focus on it at all. I told myself that I should enjoy my summer, that I *want* to enjoy it, but PD has probably been the single most detrimental thing to my mood so far. Don't get me wrong, there are many, many other factors that have been destroying any enjoyment I've had, or will have. Maybe that's just been the easiest and most convenient to point to and say "that's the main reason for how I'm feeling". I've deliberately stopped doing things I actually enjoy cause I thought I'd distract myself which didn't work since I've been doing that anyways and I haven't been able to stop myself. But anyways, here I am, writing this article because even though I somehow have the will to type out *something*, I can't even find the motivation or ideas to write anything more serious or creative or funny or, most importantly, worth your time to read. Sorry.

terminal

MATHSOC SEZ

THE RISE OF THE BREAD PUNS

It's a little hard to believe we're already halfway through the term and halfway through 2023, but rest assured, MathSoc has a jam-packed July ahead. Speaking of things that are jam-packed, I'm going to *roll* with bread puns this time around.

Why bread puns? The CnD now has bagels available! *[Editor's note: 😍🎉🥯🙌🥰]* The selection includes: plain, pretzel, sesame, poppyseed, multi-grain, apple cinnamon, cranberry cheddar, and jalapeño tomato… mmmmm…

YOU DONUT WANT TO MISS THIS (SEMI FORMAL)

July 14 | 8:00pm–12:00am | The Turret, WLU Campus

We're so excited for MathSoc's Semi-Formal that it has its own category in the Sez!

This is your time to dance the night away with MathSoc on a wonderful summerloo night. There'll be great music, light refreshments, and most importantly, a great time to be had. Spots are limited—secure your spot before July 14th! Tickets are $20 each, and students can buy one for themselves, and one for a non-student.

Speaking of ticket sales, they're out *now*, with the link being https://wusa.ca/event/mathsoc-semi-formal/ (searching up "MathSoc Semi Formal" will bring this up too). Sorry, print **mathNEWS** readers, the editors will invent the ability to click on links eventually.

A DOUGH-SE OF EVENTS

We're not kidding when we say July is jam-packed. Like a donut with a jam filling, the month will be amazing inside and out, with wonderful surprises sprinkled throughout.

We hope to see you around!

- **Party with Profs—July 7 | 5–7pm | Grad House**
  Grab a bite and have a drink with your favourite profs in a chill, non-academic setting, at our termly Party with Profs event!
- **Games Nights—July 11, July 25 | 6–8 pm | Math CnD**
  We'll provide the games and snacks—all you have to do is bring yourself, and an enthusiasm for games and hanging out with friends! July 25 will be extra-special, because we'll have profs in attendance!
- **Upper Year Talks—July 17 | 4–6pm | MC Comfy**
  Informally, this event is called F*** Up Talks. It's a panel of upper years talking about struggles they've had to overcome, whether it's with academics, mental health, or anything else. It's okay to fail or mess up. You're not alone in your experiences. All Math students are invited—lower years and upper years alike. Light refreshments provided.
- **Pi Approximation Approximation Day—July 21 | 1:59pm and 3:14pm | MC 3rd floor hallway and MC Comfy**
  Pi Approximation Day is the 22nd, but since that's a Saturday, we have to approximate the approximation day. We'll eat approximately pie (cake) at 1:59 in the 3rd floor hallway, recite pi at 3:14 in MC Comfy, and yeet approximately pie (whipped cream) at the MathSoc Executives at 3:14pm in the 3rd floor hallway.
- **End of Term Yoga Destress—July 26 | 6:30pm | PAC**
  We're hosting a destress session before finals season! It's no stretch of the imagination that taking a break from finals studying is beneficial in the long run.

LOTS OF LOAF, MATHSOC <3

Even more events, except centered around MathSoc—what we do for you, getting to know your execs, and participating in the Math community.

- **Town Hall—July 12 | 4:00pm–6:00pm | EXP 1689**
  Like GM, but informal. And no motions, and no voting. And no rigid meeting structure. It's a chill introduction to what MathSoc is and what we do. Feel free to ask any questions and hang out! Light refreshments provided.
- **MathSoc GM—July 19 | 6–8pm | M3 1006**
  I am once again asking you to come to GM. This is where you find out what MathSoc has been doing for you this term, as well as vote on important issues that affect all Math students. Food will be provided.

YOU WILL NOT BE TOAST IN YOUR FINALS

- **Finals Review Sessions—Dates and times TBD**
  If you're taking one of MATH {128, 136, 138, 235, 237, 239} this term, you're in luck—MathSoc is hosting finals review sessions for these courses!

FOCACCIA-ONAL ADVOCACY UPDATE

Focaccia, occasion? Get it? Yeah, that pun's pretty awful, I'll admit.

Anyways, we're taking a break from announcing events, and discussing what MathSoc is doing in terms of advocacy. Just because we've been hard at work planning fun events doesn't mean we're throwing our advocacy to the side.

- There is a University-wide rework of the communications courses on the administration side. The courses themselves will not be changed, but they

are being relabeled under different subjects. Many of you may already have seen that SPCOM courses are being relabeled under COMMST. These are the same courses.
- MathSoc has gathered many, *many* opinions about WaterlooWorks' proposed UI/UX upgrade, and about what students would like to see. We will be presenting these to CEE in August — if you have *any more feedback*, please send them our way!
- CEE has plans to add 12 and 16 month coop terms to WaterlooWorks. If a student wants to add one of these coop terms to their plan, they must seek permission from the Faculty, as the standard coop sequences will not include these extra-long coops.
- We are aware of the proposed changes to students not being able to renege coops — and if they renege, they lose the coop credit. For now, the Co-op Council suggests that students petition with Policy 70 if they must renege due to extenuating circumstances, and that they are giving students more Not Interesteds. However, this is not ideal at all. We will be advocating against this to CEE.
- We have regularly scheduled meetings with the Math Faculty's Equity Officer to discuss equity initiatives in the Faculty of Math. You best bet we're having discussions in the wake of the awful events on campus last week. We're also in the progress of setting up a Queer Math Community — official name TBD.

MATHSOC(IAL)

In-person: MC 3035 and MC 3038
Our website: https://mathsoc.uwaterloo.ca/
Email us: info@mathsoc.uwaterloo.ca
Instagram: @uwmathsoc

Grace Feng (MathSoc President, S23), on behalf of the S23 MathSoc Executive Team

PSA: PORTA POTTY IS 4 SYLLABLES

It is in fact not 2 syllables and will use up 4 of 5 syllables allowed in the first line of your haiku. If the first line is 7 syllables for a total of 19 syllables, it is no longer a haiku by definition. Clapping twice while you say "porta potty" is not a valid proof of it being 2 syllables. Also, saying it really fast does not reduce the number of syllables. *[Editor's note: you're so right…]*

yummyPhi

A STATEMENT REGARDING MY HAIKU IN mathNEWS 152.3

I have recently been informed that the haiku titled *Short But True Haiku That Happened Last Weekend* written in **mathNEWS** 152.3 was accused of having 7 syllables in the first line, rather than the mandated 5. I strenuously reject the notion that the phrase "porta potty" contains 4 syllables, and in fact believe it contains 2, making my haiku correct. There are two strong pieces of evidence that support my case. The etymology of the phrase porta potty originates from its creator, the Frenchman Pierre Garçon, who lived from 1795–1852. Mr. Garçon, the creator of the popular word, pronounced it in a way that would resemble *port-pot,* a two syllable word. As I respect Canada's bilingual status, I wrote that haiku with the French interpretation in mind. Second, if you say it fast enough, it also sounds like 2 syllables.

I will not be silenced by the elite.

Au revoir.

Lars Nootbaar

TOP 10 WAYS TO BLIND YOURSELF

Hey gang, it's your boy /'aeren/^2 back with another Top 10 list. Today — the best ways to never see the people you love or the wonders of this universe ever again. Let's jump into it.

1. Stare at the sun without eye protection for 6 hours
2. Drink copious amounts of methanol
3. Gouging with a spoon
4. Pour drain cleaner into your eyes
5. Gain a crippling smoking addiction
6. Sleep with contacts in for a month straight
7. Steal and ingest a bunch of chlorpromazine
8. Apply calcium hydroxide directly onto your eyes
9. You already have. Think of how long it has been since your heart truly raced. Plato chiselled out his cave, but you? You've built something else entirely. Unholy walls of irony bind a Dyson sphere you've built around your soul. You reap insignificant rewards from a desiccated society as the person-who-was-once-you drowns eternally in their own tears. See now that the salt has sealed their eyelids shut — oh yes, person-who-isn't-you — you've blinded yourself. You can see who you are no more than the blindworm can see the snake who has already devoured it whole.
10. Chopsticks

/'aeren/^2

MARINELAND IS UNETHICAL, AND WORSE, A BAD THEME PARK

If you grew up around this part of the country, you know Marineland for exactly two things: severe animal abuse, and that inescapable jingle.

For everyone else, Marineland is a marine-life themed amusement park in Niagara Falls, Canada that's been open since 1961. It's most notorious for their exceptionally poor treatment of the sea animals in their care, as well as for management's stubborn refusal to bend to activist pressure and change the park in any way. Many have expressed surprise that the park is still solvent, owing to its unpopularity with basically everyone.

I don't want to undersell the animal abuse inherent to the foundations of the park. There's some truly heinous shit that Marineland has pulled—but, in a way, I think that focusing on just that aspect of the park almost lets it off too easily. It acts as a lightning rod for criticism, when there's *so much else* wrong about Marineland that goes unaddressed. Even if it fixed its treatment of animals overnight, it would still be *deeply* baffling as a theme park.

The most confusing thing, to me, is its size and location. Marineland is *huge*. It's bigger than all 4 of the Disney World parks combined. The first thing people notice when they go is just how empty it seems, not just because it's a dying park that nobody likes, but because the handful of people that do go are spread out over an area that is roughly the size of Poland.

The pathways between areas are wide enough to drive several lanes of traffic through. There's no ambient music being played, so all you hear is the hum of ride machinery and the distant noises of upset animals. The park has an inexplicable half-assed medieval theme, so you'll occasionally run across run down, shitty looking 1500s cabins that were food stands a decade ago but have been closed since god-knows-when. There's a real train track that runs through the park—not a ride train, an industrial train—because Marineland is somehow situated exactly between two factories that run raw materials between each other *through the park*.

It would be one thing if they needed all this space, but Marineland barely has any rides, and most of the ones they do have are lightly themed, off-the-shelf flat rides (think carnival rides but marginally safer). Many of these are closed often. One of their rides, a Topple Tower that they creatively named "Topple Tower", was installed improperly in 2007 and was down regularly for maintenance until it closed permanently in 2011. They left it standing, abandoned, for eleven years. The ride they replaced it with, Star Voyager, is closed as of the day I'm writing this article.

Even the good stuff at Marineland is tinted with these incomprehensible design decisions. Take Sky Screamer. It's absolutely their most iconic ride, a gigantic S&S drop tower you can see from any point in the Niagara Falls skyline. It literally towers over Marineland in every sense.

Riders can reach a maximum height of 450 feet off the ground… but the tower itself is only 300 feet tall. This is because there is a 150 foot hill you have to climb up in order to even get to the ride. Like everything in Marineland, this is not a small hike, and there's no tram or escalator to make it easier. To get to the Sky Screamer, you'll need to climb a mountain.

But the weirdest ride in the park has to be Dragon Mountain, Marineland's sole roller coaster targeted to adults. I could dedicate another thousand words to it, but the gist of it is that Dragon Mountain is the only part of Marineland to feature any level of care or ambition… and it still fails in fascinating ways.

Built in the 80s as a counter to the competitive force of the recently opened Canada's Wonderland, the original plans called for one of the largest roller coasters by track length in the world, with the riders traversing Marineland's vast backlot, around a quarter-scale replica of Niagara Falls, and to end the ride by circling the inside of a model volcano.

And then they ran out of money.

What they ended up finishing was the track of the ride, the wireframe of the volcano, and an absurdly elaborate queue where you go through the mouth of a carved stone dragon. Eventually they got the money to finish the outer half of the volcano sometime in the late 2000s, 20 years after the ride was built.

Once you know this, you can *really* tell. There are some genuinely good elements, including a unique bowtie element, and it covers a staggering 30 acres of land. But there's also long stretches of nothing happening because that's where they were going to put the fake waterfall. And it was built in the 80s, so it's really rough. It all averages out to an okay ride with a very strange history.

The key thing to understand is that Marineland is not a normal business. Their operational goal is not to entertain. It's not conservation or education. They don't even operate on the principle of attempting to make as much money as possible—if so, they'd cash out and sell their extremely valuable land. No. They operate out of spite.

They exist solely because people say they shouldn't. They will keep existing as long as people say they can't. It doesn't matter how hated they are, how run-down the park is, how much it deteriorates, how much the animals suffer. Marineland, the weirdest, worst park in the world, is going to outlive all of us.

Dick Smithers

IT'S ALL ANYONE CAN TALK ABOUT

work placements. grueling assignments and code that won't compile. talks of shows i've never seen and never will. i desperately want to talk about anything else.

it's all anyone can talk about.

i don't see it until i see the paramedics on my way home, hear nothing until i pull up the website and see there's been an attack. to think they were testing the alert system that day too.

it's all anyone can talk about.

the world goes crazy. my phone blows up. my friends ask, were you there? did you see what happened? are you okay? i'm glued to a screen for hours.

it's all anyone can talk about.

i think about how someone could have seen their parents, their friends, for the last time. i think about how it could have been me. i think about all the "what if" and "what about" and "what might".

it's all anyone can talk about.

campus is silent the next day, and yet so, so loud. i hear the name whispered on every lip i pass, every gory last detail, a spectacle spreading out far and wide.

it's all anyone can talk about.

the rumour mill runs freely. knowing the face, the name, someone i ordered iced coffee and strawberry filled timbits from makes me feel sick, for some reason.

it's all anyone can talk about.

it's what i say to my dad, the first thing, when i come home after two hours on a train. he nods, he's seen the news. it's what i say to my mom, and explain what happened in broken Cantonese. it's what i say to my brother, then two hours later ask if he's still coming over for Canada Day.

it's all anyone can talk about.

there's so much emotion and feeling, and yet none at all. i was never there. i have no right speaking when others had much greater presence, but there are thoughts. perhaps i am not alone.

it's all anyone can talk about.

the phrase runs deep in my mind, looping on repeat. the way the events that transpired have left something—not a mark, or a presence, just *something*. i desperately want to talk about anything else.

it's all anyone can talk about.

Skit

POV YOU ARE A HUNTER GATHERER BEING CHASED THROUGH THE PALEOLITHIC UNDERBRUSH BY A SABER-TOOTHED TIGER

As you run your lungs feel like exploding. Your feet pound against the moss and stone that make up the forest floor. In theory, this cat shouldn't have the endurance you do, but none of that matters if it catches you soon enough. You don't dare look back, but it's not like you need to. You can hear this thing growling and snarling behind you. You can hear the rhythmic thump of its heavy feet on the ground, getting closer and closer, louder and louder. You can hear the snapping of branches as it thrashes its way through the underbrush. You are even beginning to feel its warm moist breath on your back.

As you continue to run, you make your way past a babbling creek. The sound of that clear water running over those rocks makes you realize that you haven't peed in a long time, and in the excitement of this tiger incident, you forgot that your bladder is full to bursting. You try to push it out of your mind, but the more you try to think about not peeing, the more you have to pee.

Eventually you give up. You stop at a nice tree and pull down your paleolithic pants and begin to relieve yourself.

You don't even get the chance to feel relief. The 750 pound monster's razor-sharp 20 centimetre-long tusks carve through you like you were made of fog. Its huge muscular form obliterates whatever is left of you, showering the forest in a fine red mist.

If only you hadn't had to stop and pee. If only you, the early human you were, had evolved some other way to get rid of your liquid waste.

This begs the question:

If evolution is real, why didn't humans evolve to sweat piss?

aphf

THE POKEMON GO EXPLOIT FAIL

I had an article in **mathNEWS** 148.2 about the best exploit in Pokemon Go a couple years ago. This one, on the other hand, recounts more a failed exploit of sorts. It is after the events in that article, but this one was still from a couple years ago.

❦

It shouldn't be news that Pokemon Go has in-game purchases, including ones where you can directly buy the in-game currency, called Pokecoins. Sure, you can earn some Pokecoins in-game, but it is limited to 50 per day. So, what are the options if you want to bypass that limit?

These are the following Pokecoin bundles (rounded up from their actual prices ending in .99), with the coins per dollar in parentheses:

- 100 for $1, (100/$1)
- 550 for $7, (78.6/$1)
- 1200 for $14, (85.7/$1)
- 2500 for $28, (89.3/$1)
- 5200 for $55, (94.5/$1)
- 14500 for $140, (103.6/$1)

Obviously, the best option is the last one in the list, but most people are never going to be spending that much money in one go. I've spent some money in this game but it would likely take me playing more than 20 years to reach $140. Who knows if Pokemon Go will last that long? Compared to the first bundle, spending $140 for an extra 500 coins is not that much of a bonus if you think about it. This is why I have only ever done the first bundle for any in-game purchases.

You may find it weird that the middle options are terrible since no one would ever select them. Typically, in-game purchases will have better deals the more you spend in one go, but what happened here? This happened because they applied an approximate USD to CAD currency conversion for all of them except the first option.

You have now reached the point where I tell you that a separate Galaxy Store on Samsung smartphones exists. This store also has Pokemon Go, and so I have it downloaded from there as well as from the Google Play Store. This means I have 2 Pokemon Go icons on my phone. The same login works in both copies of the games. They are completely identical.

Well… there is a small difference between them, in that the different origins create differences in how they do in-game purchases. The first difference is taxes.

If you spend $0.99 for 100 coins then the Google Play Store already knows what province you live in, thus also the taxes to apply, and you pay $1.12 with 12% tax in BC. The Samsung Galaxy Store must think taxes are theft because it didn't charge any tax whatsoever. Every single time, if the price said $0.99, then you paid $0.99 exactly.

I originally downloaded the Galaxy Store version of Pokemon Go because I heard that there was a limited-time promotion where making an in-game purchase would give you a free $1 coupon on your next in-game purchase. I knew I was going to spend at least $1 eventually so I thought I may as well. So, I went through that expecting to effectively get 200 coins for $1.12 + coupon, but it ended up being 200 coins for $0.99 + coupon!

So you may think that the "not paying tax" part is the failed exploit, but no! I still use the Galaxy Store version of Pokemon Go to save on taxes. Instead, the failure comes later. After that original promotion ended, there was a period of a couple months where there was a different promotion where *all* in-game purchases were 10% off.

Great news! …Right? That's what I originally thought too, thinking that I could get 100 coins for $0.89 now, but it wasn't quite so. If you tried to buy something priced at $0.99 during the discount period, it would stop you, saying that $0.99 was the minimum purchase requirement. This meant that until the discount was over, the Galaxy Store version of Pokemon Go became useless to me, since I wasn't going to drop $140 in one go anytime soon. So, I went back to the Google Play Store version, but I still kept both downloaded on my phone.

This is the exploit fail. What I assume was Samsung's plan to try and increase in-game purchases via their own store, thus increasing their take of the earnings, it instead made the store have basically no use for me. I was unable to use their store for the only in-game purchases most people would ever buy. I even tried to tell Samsung Support of this oversight, but I don't think anything happened afterwards, since it remained the same for years after this discovery.

The obvious fix is to allow for no minimum purchase price. They already allow "purchases" of $0 to happen, so why have a limit? The next easiest fix would be to either have the 10% discounted price or the minimum purchase price of $0.99, whichever is higher. This would mean that you don't get the discount, but you would still be paying less since Google adds the tax. Another fix could be allowing multiple purchases in one go. That way, you could buy two 100 coin bundles, as ($0.99 + $0.99) * 0.9 = $1.78 >= $0.99 so it would be above the minimum purchase price while still being able to take advantage of the discount. I don't think any of these fixes will ever happen.

❦

Those six Pokecoin bundles were the only available in-game purchases. It wasn't until months later that there were new in-game items in the shop obtainable using real money, but not using Pokecoins. They are tickets which give you access to exclusive events. At first, these tickets were $0.99 since they weren't that fancy, meaning they still were subject to the $0.99 minimum purchase + 10% discount interaction oversight. After a while though, there were the occasional higher-priced

tickets which had a bunch of exclusive items and rare Pokemon.

It turns out that people noticed a significant difference in pricing depending on which app store the game was from. Depending on Apple, Google, or Samsung, you could be paying a couple extra dollars for the same ticketed event in the same game.

❦

I guess this just means that pricing in mobile game purchases is just weird, arbitrary, and inconsistent no matter what, so take advantage of any exploits whenever you can. It's not like any of it makes any sense in the first place.

boldblazer

PALISADES, CA

A NEW HEADCANON FOR THIS RANDOM FICTIONAL CITY

Following the events of Outbreak (1995), the residents of Palisades vowed to never let anything stand in their way again — no hyperinfectous disease, no military takeovers, no crime, no pain, no suffering. They would clean their neighborhoods of all evil, and swore allegiance to their mayor.

The transformation was swift: independence from the state of California declared, martial law introduced, quarantines implemented. The city shut down faster than you could say "hyper-totalitarian-state".

Amidst the lockdowns, the people, still feeling insecure, started hiring mercenaries to protect and serve them. They were hired en masse, so much so that they soon unionized and started gaining political power. It wasn't long before they became the new government.

They were the "pallaishades" — part rightful paladin, part shadeful rogue. They served the light, the commonfolk, the kingdom; and they colluded power, pillaged criminals, dressed in midnight black. They were unstoppable.

(Use your imagination here! Do message me if you have any ideas…?)

…

In 2050, the US, being tired of the pallaishades's gambit, nuked the soverign nation of Palisades, killing 50,000 and ending the pallaishades for good; the end.

andoiii

ZEN

A black canvas. An empty area awaits. I eye the space in front of me, imagining the form I wish to create.

I mark out the skeleton of my piece. I do not rush. Proportions desire precision. I create outlines, observe, remove and redo. It is all part of the process. Nothing good comes easily.

The curves of my creation are a delicate business. It is natural. The medium does not lend itself to the task, but is forgiving. I speak to it, and it builds itself in front of me. Occasionally, many minutes are taken for minute details. It is like a puzzle. Satisfying with each exact piece. I carefully construct limbs out of nothing. I design a tail, then delete it entirely and start over. It is okay. Nothing is permanent.

I colour my work with off-white and rust orange. Sometimes, I colour it wrong. I go back over it. I make sure that it is pleasing from all angles. Time is no issue. With each moment and revision, it is improved. There is no finish. I decide I am done at an arbitrary point. Nothing is perfect.

I step back. I have done well. I have been satisfied. I have built an anthropomorphic fox in *Minecraft*.

hyperlynx

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.

profQUOTES

CO 250: KANSTANTSIN PASHKOVICH

❝ Good— *[earsplitting mic feedback noise goes on for several seconds]* hello— *[more room-shaking mic feedback noise] [the tables are literally vibrating from the noise] [takes the mic pack off]* I'll go without the microphone today.

❝ If there are no questions, let us increase the pain level.

CS 230: MURRAY DUNNE

❝ One, this error message is wrong.

❝ That function did its dishes.

❝ Well shit, that wasn't what I meant.

❝ I'm sure Wikipedia has some authoritative stance on this and I'm pretty sure they're wrong so… *[shrug]*

CS 234: CAMERON MORLAND

❝ Computer scientists don't go outside often enough. They think roots of trees are at the top.

❝ This *[highlights line 1]* is the obnoxious computer science answer. This *[highlights line 2]* is the helpful answer.

CS 240: ÉRIC SCHOST

❝ If the randomization is well done—not as a steak, though…

❝ I am almost done with the analysis. Well, I am almost done because I am not doing it.

❝ It's a very tedious exercise. *[crouches down behind desk, temporarily hidden from students' view]* I'm not hiding, I'm coming back.

❝ Recursively, we have a technical difficulty in our technical difficulty.

❝ LSD radix sort. *[chuckles]* I tried to see if MSD is also funny, but I don't think it is.

CS 241: GREGOR RICHARDS

❝ Luckily I, a little quiet, am still in the top 5% of the loudest people who have ever lived.

❝ I keep looking at that clock, just dreaming of a world where we can maintain such complicated infrastructure as a clock.

❝ C++ is a nightmare. C++ was written by, just, idiots.

❝ … technically that's repetiiiiii—*[falls off stage]*—tion.

❝ Obviously it's a lot easier to do parsing when you have a magic fairy on your side.

❝ I shall play the role of the magic fairy—I've been called worse.

❝ Why is it called LL(1)? 'Cause it's stupid… First L is racism, second L is for leftmost derivations.

❝ This is quite a restrictive uuuuuuu—*[falls off stage]*

❝ Asking "what does C do?" is not generally a good approach to life.

CS 251: ZILLE HUMA KAMAL

❝ Now back to the single cycle control, which is easier to solve than my daughter's problems.

CS 341: ARMIN JAMSHIDPEY

❝ Student: "What's the midterm average?"
Prof: "I can't tell you because I don't like it."

CO 342: PETER NELSON

❝ All my markers are busy defending theses or writing comprehensive exams, so I can't make them work through the night like I usually would.

❝ Graph theorists like minors.

CS 350: KEVIN LANCTOT

❝ One enrols in CS at Waterloo and gets a good job, the other enrols in arts and becomes a drug addict.

MATH 237: FAISAL AL-FAISAL

❝ If you go to another university, **cough cough** universityoftoronto, they don't show you this, because they don't respect you.

MATH 245: RUXANDRA MORARU

❝ You already moved on because this is simple. I understand.

PMATH 351: ALEXANDRU NICA

❝ Happy hour is nearby.

❝ I thought having a mini-project would be more interesting than suffering through a midterm—well, you'll be suffering through the mini-project.

❝ All this yawning would cause damage to the jaws, and dentists would need to be called in.

PMATH 352: ANTON MOSUNOV

❝ If I wake you up at three in the morning, asking you to state Liouville's theorem, before you call the police you should be able to say, "Anton, a bounded entire function is constant."

STAT 231: JACK DAVIS

❝ Now, getting a -4 grade point is nonsensical. You can't get a negative grade point. Tried in high school gymnastics. True story. Sad story. *[laughs traumatically]* Trauma…

STAT 333: SURYA BANERJEE

❝ Let's say X is the number of accidents that occur. As a human being you might care about X. But as an insurance company, you only care about g(X).

❝ Have you solved differential equations before? One of the ways is called guessing.

❝ Let's say I have $100, and the casino also has $100. Very poor casino.

CS 349: JEFF AVERY

❝ You could be annoying and do that. And if you do that on the exam, I will smack you. I will hunt you down and find you and yell at you in front of your parents.

❝ *[Very few people in class]* Bonus marks to everyone who came to class today. But you'll never prove I said that. *[Writer's note: this counts as proof.]*

❝ Don't use yellow for one color and red for another, that's kinda dumb—I shouldn't say dumb—that's bad for people who are color-blind.

CS 458: ADITYA VADAPALLI

❝ We want hash functions, not hash browns.

CS 486: PASCAL POUPART

❝ Usually the solution to winning a competition is to copy the approach of the winner last year, tweak it a bit, and just win.

❝ Losing neurons doesn't affect you until you reach a certain age… and then you're done.

CS 486: SRIRAM GANAPATHI SUBRAMANIAN

❝ There will be no learning in this lecture.

❝ If I tell you I'll give you a hundred million dollars in a thousand years, you won't be happy anymore.

I GOT HIM

Well, there you have it. I've spent six or seven months looking for this guy. John Peebles—one of **mathNEWS**' co-founding editors. He is alive and old and there's barely any useful information about him on the internet, but there is *enough*.

There's a folder in a filing cabinet in the **mathNEWS** office labelled "X-Editor Addresses". It wasn't current, but it was enough to make a root for a tree. And if even one of the shitty Web 1.0 websites I visited along the way went missing, it would've been impossible.

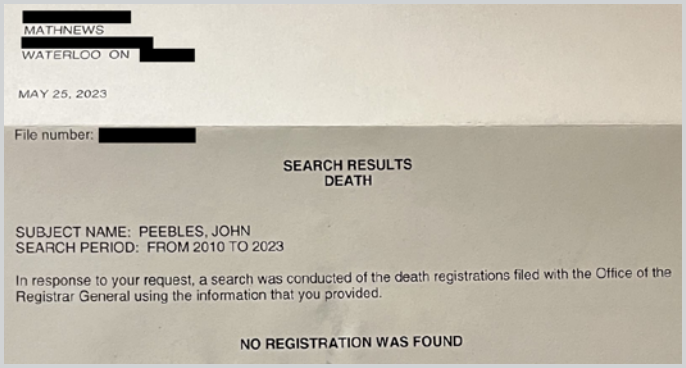
Here's the summation of six months of late nights flipping through old document scans, phone calls and emails to dead people and places of work, formal death search requests, and so on:

> *Hello Evan:*
>
> *I have received your email!*
>
> *Congratulations on the 50th anniversary.*
>
> *I am pleased to know that* **mathNEWS** *is still publishing.*
>
> *I must say, however, that I have no interest in an interview, etc.*
>
> *With kind regards,*
>
> *John Peebles.*

Thanks to the other editors, current or former, who helped along the way (in particular, thanks to distractED, god ⚡ peED, and terrifiED). Here's to hoping I never have to work that hard to find anyone ever again!

evaluatED

SEARCH RESULTS



[redacted]
MATHNEWS
[redacted]
WATERLOO ON

MAY 25, 2023

File number: [redacted]

SEARCH RESULTS
DEATH

SUBJECT NAME: PEEBLES, JOHN
SEARCH PERIOD: FROM 2010 TO 2023

In response to your request, a search was conducted of the death registrations filed with the Office of the Registrar General using the information that you provided.

NO REGISTRATION WAS FOUND

distractED

WHY SPOTIFY HAS MADE LISTENING TO MUSIC HARD

NO DANIEL EK, I DON'T WANT SPOTIFY TO BE THE SOUNDTRACK TO MY LIFE

As much as I love shitting on big corporations, I do need to give credit where credit is due — Spotify can be great. It's convenient, it's always right there in your hand, available to listen to no matter what you're doing (given that you don't care about social norms or endangering your life you can listen to it at long as your phone works). Not only that, it provides you with music all the time, so you don't even have to decide what you want to be listening to!

Yeah, in case you haven't guessed, this is the problem I have with it.

I mean, don't get me wrong, I think Spotify's free version has a ridiculous amount of ads, and I think some of their playlists are kinda dumb, but the real problem is how Spotify controls what you listen to. Daniel Ek, Spotify's CEO, said he wanted Spotify to be a *soundtrack to our lives*. Now what does that mean? Well, it means he wants us to use Spotify for whatever we're doing, and they accomplish that through mood-based playlists. Want to drive a car? There's a mood for that, and thus a playlist for that. Bury a body? The "Bury the Body and Tell No One" playlist by Spotify has got you covered (and it's mostly dark but mellow electric beats). Want to wash the dishes? Study? Well, you get the idea. Spotify's former VP of Marketing for North America publicly stated that mood-based sorting was "a strategic evolution of the Spotify ads business" because advertisement companies are very interested in knowing what our current mood is.

Okay, so Spotify has caused a shift into mood-based listening so they can make dem dollar bills (sorry). Sure, a little scummy, but I mean as long as we're still enjoying listening to music does it really matter? I mean, nothing is sacred and everything we do is sold anyway, plus what's even wrong with mood-based listening?

Wellllllllllllllllllllllllllllllllllllllllllllllllll

I, among other people, have been a little discontented with this way of listening to music, because it feels *passive*. Like I'm not listening to music for the sake of listening to the music, but because I just need some noise on while I do something else. And the music for these tasks is *boring*. When I actually sit down to listen to music for the sake of listening to music, I don't really want to listen to the songs that accompany my everyday tasks because they're just not all that interesting. They're fine for a bit, but they're not really challenging in any way.

And, this isn't just something I feel, it's been proven Spotify is doing this on purpose. See, along with mood-based listening came playlists, so you're automatically getting a stream of songs played to you all the time. Say we're looking at your Daily Mix playlist (which is mood-based as well through its algorithm detecting and categorizing a mood). Spotify literally describes it on it's official site as "designed to provide familiar, comfortable music… it's designed to be the shortest path to a good musical experience". These songs are not meant to be interesting, to challenge the limits of your music taste, and too see if you'd like something new or different. No, Spotify is banking on you doing something else while you're listening, so all you have to be is *not bothered enough to actually skip the song*. You don't even have to really like it, it just needs to be *inoffensive* enough that you won't switch to something else or worse — stop listening on Spotify.

Worse, this idea is affecting the music that even gets written. A Guardian article by Nosheen Iqbal reports that a senior music industry executive thinks that music that dares to not follow Spotify's "safe" formula are seriously penalized by them because the skip rates are too high since "people let playlists run on in the background when they serve inoffensive, bland music they can't be bothered to turn off." Songs are being purposely written to not be skipped by generally being safer, chiller (Spotify loves that word), and more upbeat. They're also getting shorter and the chorus of the song played a lot sooner so it avoids getting skipped. Now to be fair, pop music has always had to bend to whatever was popular, which is often what is safe. Fun fact: in the 40s and 50s, regular pop music was often seen as too boring and safe which played into how rock 'n' roll got popular — it was seen as edgy (take MUSIC 140 if you can, great class). But, I think Spotify has exacerbated the issue by having so much *control* over what we listen to.

And I believe that's the crux of the issue: sure, Spotify has caused a shift to mood-based listening, and we feel like we don't even have to choose something we want to listen to, yes. And, it's not so common anymore to seek out a specific song, or search for the record of a band you really love (not to say people don't do that of course). But the real issue is the lack of *control* we have in this matter. Spotify is so ubiquitous, so convenient, so *automatic*. It's become so hard to purposely listen to music that is not necessarily so pleasant at first listen — I feel it in myself I've become impatient for a song to impress me right away. And that's just not how I want to listen to music, but I feel like if I want to use Spotify I don't really have a choice. Spotify's not going to give me the type of listening experience I want, not unless they seriously change how he company works. And, until they do that, I think I need to start finding other ways to listen to music.

Time to bug my friends for music recommendations.

*Not a N*rd*

A feature is just a documented glitch.

PROF. IAN MUNRO

THE COOKSVILLE GO STATION PARKING GARAGE IS UNCOMFORTABLY LARGE

I first saw the Cooksville GO station parking garage when I was riding the 21C GO bus in Mississauga, and something about it really freaked me out.

Something about its size, in particular. But I've seen big buildings before — quickly measuring on Google Earth, it's 177 metres across: not nearly as wide as Union Station, about the same width as the Art Gallery of Ontario, and not even that much wider than my own high school. Its height is harder to find out from a search, but on Street View you can helpfully see a 2.3-metre marker, which helps me estimate the height at about 20 metres, also comparable to Union Station and the AGO.

Of course, there's a pretty clear difference between all these places: Union Station, the AGO and a high school are more human-scale, whereas the Cooksville parking garage is a place you drive into and leave through a little door in the back. But I've also seen places that aren't human-scale. There's something specifically unsettling about the Cooksville parking garage, with its exact shape and size, in the environment that it's in. And I don't think there will be a way to get to the bottom of this without going there again, walking around, and finding out exactly what makes this structure so off-putting.

So I'm here, and my first observation is that, after the initial shock, this is sort of a pretty looking building. It's got these nice angled pieces of metal mesh covering the sides, so it doesn't just look like a stack of concrete like most parking garages do. And from the inside it just looks like a normal parking garage. It's big, but otherwise not unusual. It has six levels and about 300 parking spaces on each level.

But from the outside, there's seemingly been a lot of effort put into making this space look inviting. Walking around to the side of the parkade, there's a pattern of coloured blocks on one wall, a walking path paved with concrete pavers, a few dozen planters and small trees with benches in between, a staircase entirely encased in glass. And it's all entirely empty. Nobody is here.

Part of that might be because of how the train station is serviced. Cooksville is essentially a commuter-only train station: trains go to Toronto in the morning and back in the evening, with essentially no exception. It's 4:30 right now, so everyone's probably at work. Behind the parking garage, there's a small bus terminal, but it's also pretty quiet — a local bus shows up every ten or so minutes on a different route each time, and occasionally someone gets on.

Of course, infrequently used bus stops in the middle of nowhere aren't uncommon. But this one isn't in the middle of nowhere. There are a whole bunch of apartment buildings just across the street, each about 20 storeys high. People live here, although they're not *here*.

There are people in the park across the street, and walking down Confederation Pkwy and Dundas St, and around a large sign at an intersection bearing the name of Cooksville, and up Hurontario St. All of these streets, by the way, are incredibly wide. There are people walking up and down them, and the sidewalks are lined with a handful of shops in buildings that are somewhat falling apart, but the streets themselves are all 6 or 7 lanes wide. The Cooksville sign looks tiny next to the intersection it's at.

As I continue to walk around here, this just feels like a normal quiet little neighbourhood: one with houses, apartments, townhomes, a high school, a park; one with a large enough immigrant population to have stands of Indian newspapers at street corners; one where the provincial government set up an office to inform locals about the under-construction LRT — and in the middle of it all, a train station with the biggest parking garage I've ever seen, surrounded with more parking lots that in total take up 7 times the space of the Kitchener train station (parking included), where every road that anyone could possibly take into it has been widened to seemingly allow everyone in the city to drive into here.

I'm not sure why that makes this area give me such an unsettling feeling, but it's definitely, uh, unique. It's a place of extreme contrast, where the built structures are at one scale or another, each one designed either for local residents or for large volumes of commuters to drive through the area, park at the train station, and leave. One or the other. A place that can't decide whether it's an urban neighborhood or suburban infrastructure. Could I have found a place like this anywhere else but Mississauga?

__init__

EPISODE 58: ABSTRACT VECTOR SPACES

Enjoy Episode 58 of the MathSoc Cartoons series: *MATH 136 — Abstract Vector Spaces*!

Want to see the next comic BEFORE it's released and provide feedback to help us out? Sign up anytime to be a reviewer at https://bit.ly/mathsoc-cartoons-reviewer-signup!

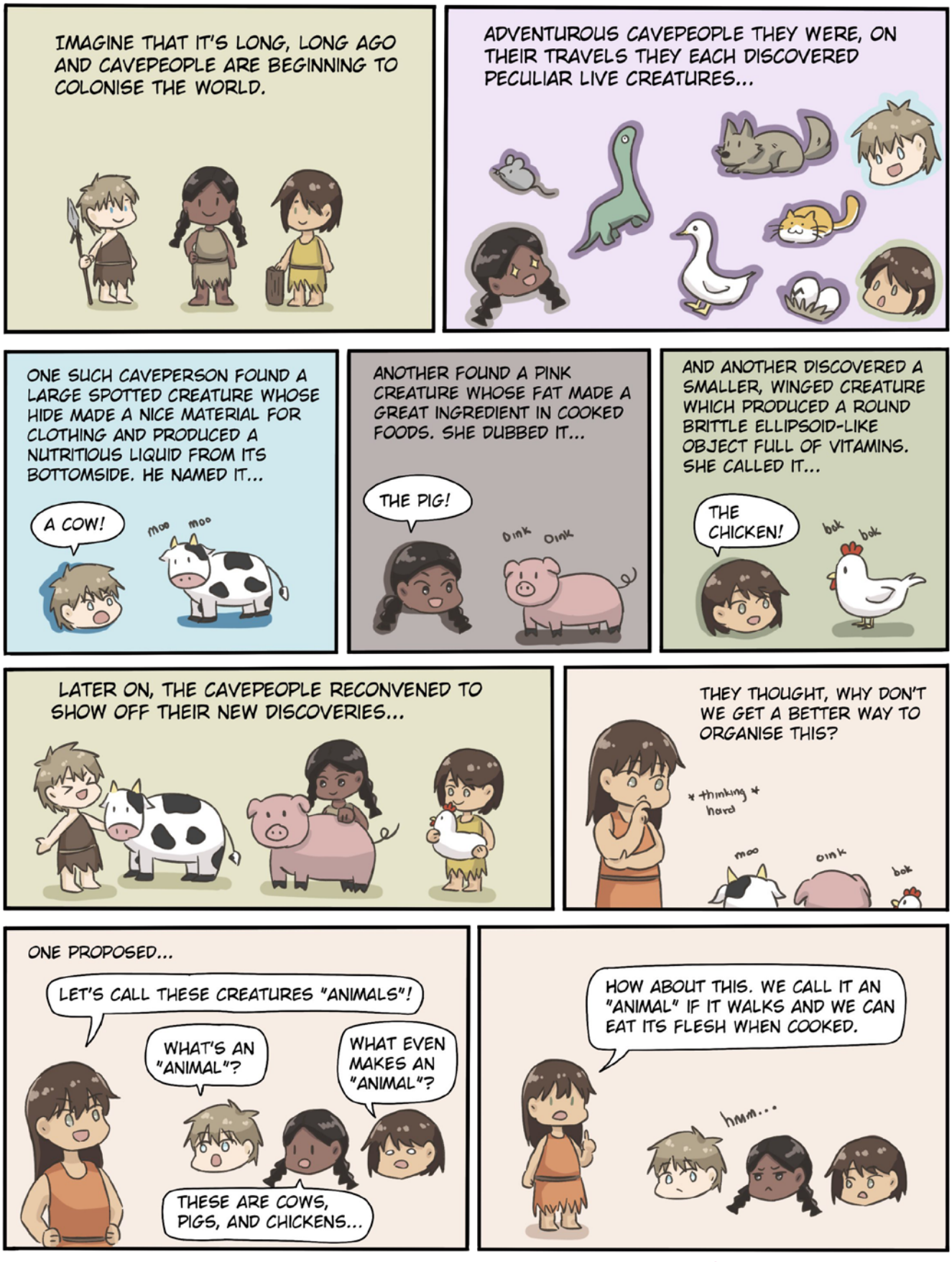
Want to see the next comic when it's released? Follow @mathsoccartoons on Instagram and Facebook!

As always, feedback, suggestions, and fan art can be left on the MathSoc Cartoons channel in the MathSoc Discord server or sent to cartoons@mathsoc.uwaterloo.ca.

MathSoc Cartoons

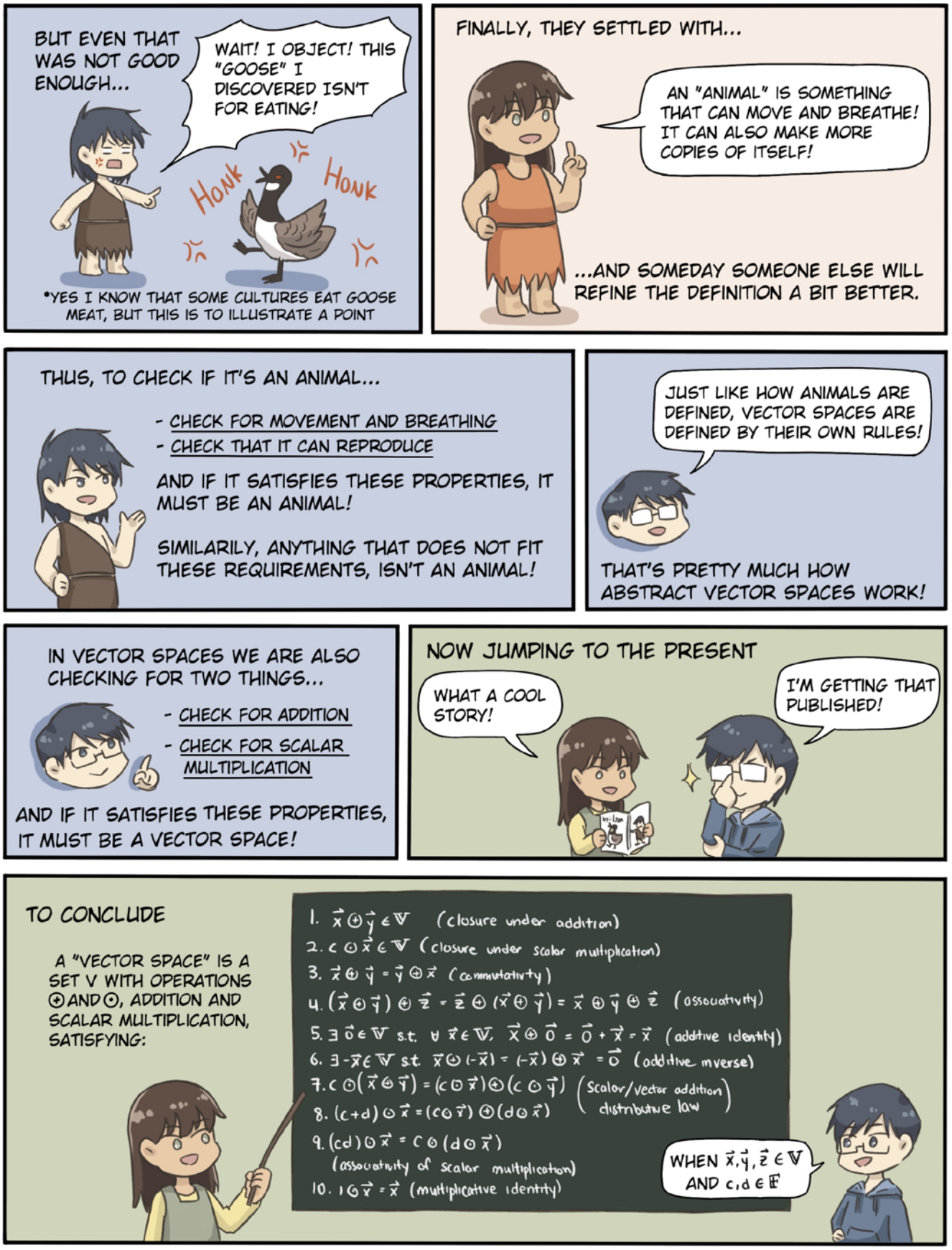
MATH 136 - ABSTRACT VECTOR SPACES

STORY BY: BRYAN CHEN, ART BY: LISA WEI



MATH 136 - ABSTRACT VECTOR SPACES

STORY BY: BRYAN CHEN, ART BY: LISA WEI



RECIPE FOR RETHINKING YOUR RELATIONSHIPS AND ALSO STRAWBERRY PIE

There were a few topics that I thought about writing today, such as trans rights and the recent events on campus, the latest Supreme Court rulings in the US (pretty fitting for the 4th of July), Olivia Chow being elected mayor of Toronto, the fact that being gay is still criminalized in 64 countries, or Dorota Lalik, a Polish woman who slowly died of septic shock over the course of 3 days because she was denied a life-saving abortion.

But I realize that most people have seen enough bad news, and furthermore, there are journalists who would write about these events far more elegantly than a 3rd year CS undergraduate student could *[Editor's note: don't sell yourself or other* **mathNEWS** *writers short! :P]*. So I guess I can shout my personal thoughts into the void that is the platform which **mathNEWS** has given me.

People have different approaches to life, and here's part of mine: I believe that one of life's greatest joys is having and keeping wonderful people in your life. Every bond formed is a precious treasure, because the relationships you cultivate with people are so astonishingly unique, there is no replacing, buying, or otherwise falsely creating them. Especially close friends—because these people chose to be in your life, and despite not needing to, have decided to remain an integral part of it.

As you can probably imagine, I have an active social life, and adore it.

But in every relationship, there are defining events or moments. An interaction or course of events that makes you realize something very important about the other person and your relationship to them.

Sometimes it's good, like them helping you out when it's inconvenient or even detrimental to them. Or an important vent session where they validate your feelings and soothe your soul.

Sometimes it's bad. Sometimes its a lie or event that happens that makes you question who they really are. Sometimes you realize that even if you considered them to be very close to you, they never considered you to be the same. It becomes clear that they will prioritize their interests at the expense of yours.

And it hurts when that happens, because actions cannot be undone and words can never be unsaid. This will remain something that happened and no amount of regret or tears or patience can ever change the past.

There is a popular saying that holding a grudge or being resentful is like swallowing poison and hoping the other person dies. While I acknowledge the futility of resentment, I think it is exceedingly difficult to forgive. To spit up the poison readily feels like invalidating your own pain. The bitterness in your mouth lingers while the person who made hurt you so terribly gets away with no consequences.

They say time heals all wounds. But I never forget. The tree remembers. Perhaps I am a resentful person by nature. If so, please do not be like me and if you find it in your heart to forgive those that have hurt you, do it. Life is too short to always have tears in your eyes.

Sometimes I like to bake or cook to take my mind off things. Creating food is an expression of love to me, and it reminds me of my family, and how even when we had very little as poor immigrants in an unfamiliar country, we always had every meal together. Where there is love and effort, there is always a way to put smiles on faces. I have to remember that love is real, and that I am so fortunate to have experienced it so many different times, from different people and in different forms.

STRAWBERRY PIE

INGREDIENTS

- 2 frozen 9-inch deep dish pie shells, thawed on the countertop
- 4 cups fresh strawberries (chopped and hulled), around 2 lbs
- 1 cup white granulated sugar
- ⅓ cup all purpose flour
- 2 tbsp cornstarch
- 2 tbsp salted butter, chopped into tiny bits
- whipped cream for serving

RECIPE

1. Preheat oven to 425 degrees Fahrenheit.
2. Prick holes at the bottom of one of the pie shells with a fork.
3. In a large bowl, combine sugar, flour, cornstarch and stir well.
4. Pour strawberries in the bowl and toss them around, trying to get an even coat on the strawberries. You'll have a good deal of sugar/flour at the bottom and that's okay.
5. Put the pie filling into the pie shell that has been pricked, trying to get an even distribution of everything.
6. Dipping your fingers in some water, slightly wet the edges of your bottom pie crust and your untouched pie crust.
7. Invert your untouched pie crust onto the pie filling. Use your fingers and/or your fork to seal and crimp the edges.
8. Using a sharp knife, score some vents on the top crust of your pie so steam can escape.

9. Bake the pie for 35–45 minutes in your oven, or until the upper crust is lightly golden. I recommend putting a baking sheet underneath your pie before putting it in the oven. This catches spills and makes it easier to take it in/out of the oven.
10. Cool the pie for 4 hours (or 2 hours if you're very impatient. Just don't expect the pie to be fully set by then).
11. Cut and serve with whipped cream.

yummyPi

SLOW MATHEMATICS

I like to describe myself as a slow mathematician. I take my time with things. Unlike the droll intellectuals you see strewn across every corner of a vast institution such as ours, eager to get whatever they just worked out in their head as soon as possible down to paper so they can get to wherever they want to be next — I am in no rush. I sit back calmly, letting the ideas percolate in my head until they coalesce into elegant proofs and patterns.

Of course, this is keeping aside the fact that as of yet no one's asked me what kind of mathematician I consider myself to be, but it's good to know I have a response prepared in case it ever comes up.

But not to digress. Now, this slow mathematics also leaves its traces in the less thought-intensive, more computational rungs of the math undergraduate ladder. At the probability quiz on Fridays at 11:30, I patiently key things into my calculator with a single finger. It is such a beautiful rush to me that I may even forget that I am in a timed test. Heck, sometimes I will even compute factorials by multiplying the digits end to end.

You see, most that belong to the former class see math as something to be worked out. But to me, math is an art. Something not to be worked out, but lived through. In those moments of mathe-mating, I am disjoint from everything around me. Everyone could be rushing to hand in their papers, but I am oblivious to this, in a space of my own — the axioms still apply, but I am free to define the operations as I please.

Now in a vast institution such as ours, there is also a third kind of person, a most nefarious one. This one likes to wax poetic endlessly about the boundless joy of slow mathematics, but in reality, this is just a guise to conceal their saltiness at the fact that they are, to put it quite simply, just not as fast at math as their peers. In fact, it pisses them off so much that may even go so far as to write a whole article about it. Most certainly, watch out for those.

saltea

YOU HAVE NO OBLIGATION TO YOUR FORMER SELF

A few weeks ago, Hank Green made a video about cutting his hair into a mohawk.

"You have no obligation to your former self."

I find it quite easy to be harsh to my former self. They were too scared. Too daring. Too little. Too much. It's hard to make decisions that I will be able to look back on and feel good about. Any insight they felt they had into the situation is forgotten. How could they know better than me?

"But I am also just a story that I tell to myself about myself."

My memory of the past, especially my past, is questionable at best. The story I tell to myself about myself often feels full of holes. Despite that, it is vital in understanding myself and shaping my future. I want the story to have good structure — like those hamburger paragraphs they used to have us write in elementary school. But how do I know when it's my beginning, or my middle, or my end?

"[When I was in high school] I remember having the thought, many times, that when I was 40 years old, I wanted to get a mohawk. Because that would prove that I had a job where you could get a mohawk, which would mean that I had succeeded in 17-year-old Hank's version of what a cool life was."

Looking back on the image I had as a child of who I would be in the future, I see someone who I never could have known that I didn't want to be. I had such a different worldview. I had such a smaller world. They feel disconnected from me, as if somewhere in my past I flipped a switch to become someone else, only I don't know when. But there are still parts of them that I want to hold on to. It's just sometimes hard to identify which ones.

"I am a story that I tell to myself, and 17-year-old me is a vital part of that story. I am not him, but I love him. I care about him. I care about and love a lot of people who don't exist anymore."

Most people who are no longer a part of my life felt like a surprise. Whether slowly or all at once, maybe I was too different, or they were. All I know is I am here, a different person — switch flipped. Maybe these people could have existed still, if things were different. Or maybe my former self keeps them alive.

"I do not have *no* obligation to my former self. I have the amount of obligation to my former self that I want to have."

normalparameters

All quotes featured above are from Hank Green's recent video on his Youtube channel Vlogbrothers entitled "So, About This HAIR…", which I highly recommend.

RANKING MATHSOC DREAMS: PART 2

Update: the counter in the executive office still reads 27, thankfully.

NOT EXACTLY COUNCIL

The dream started off with a MathSoc Council meeting like any other. I showed up to the room where Council was gathered, laptop in hand and backpack hanging off my shoulder… and then immediately realized that everything was wrong.

MathSoc's Speaker was online, and running the meeting remotely from Google Meet. The Speaker should not be online — if this happened, I, as MathSoc President, would run the meeting instead. To make matters more interesting, the Speaker in my dream wasn't the actual Speaker for S23, but rather a friend of mine that I knew wasn't in Waterloo this term.

The room booking was also wrong. We weren't in the room that Council was scheduled to hold meetings in, but rather in a random classroom on MC's second floor. The projector was pulled over the blackboards and the room was overly dim — enough to clearly see that there was an old agenda pulled up on screen, and not the one that was to be discussed at this meeting.

Apparently this was enough for me to recognize that this was a dream. I strode up to the front of the room, where the laptop connected to the projector sat, and peered into the screen. Alas, a normal Google Meet.

Get out of my dream. My hands were firm against the grooves of the white MC desks. *This isn't how Council works. The agenda's wrong. We didn't book this classroom. Why are you online? You're not even the Speaker for this term.* There's nothing quite like using presidential power to take over a Council meeting that doesn't even exist.

9/10 — Entertaining story to tell. Gets bonus points for me identifying that it's a dream — it's rare that I'm able to do that.

MATHSOC EXECS GO CAMPING

I was in a car with the other MathSoc executives, and there were camping supplies shoved under our feet and sitting on our laps, as we were on an executive outing — a group camping trip. The windows were down and the forest was flying past us in streaks of green. The air was crisp and fresh. The car kicked up dirt from the road and we bounced along. Life was good.

7/10 — Very chill, very on-theme for Spring term. I want to go camping.

MC'S 8TH FLOOR

Council was to have its regularly scheduled meeting in MC 5479, and so I headed up from MC 2017, where I had another meeting right before. Except I got there, and the room was occupied. There was another meeting happening, except the folks in the room were snacking and watching a film on the projector, possibly having a movie night. I don't remember what movie, but I'd like to think it was Inside Out for the MATH 137 meme.

Either way, this meant there was to be no Council held in that room. Not a problem at all — we somehow got a new room booking across the hall. Council packed up, which meant a storm of laptop chargers and projector cables went with everyone.

I'd join them in their meeting across the hall in a moment. First, I had to grab something from the second floor for Council. Down the elevator I went. Grabbed the stuff. Stepped back into the elevator. Hit the button for the fifth floor. Very routine stuff, right?

No. In addition to the usual buttons in the elevator, there were buttons for the 7th and 8th floor, both of which were unusable unless you used a key fob first. I didn't have one, so when the elevator opened on the 5th floor, I vowed to rush up the stairs after Council and check out MC's extra floors. That never happened, by the way. I woke up before I could see the 8th floor.

But the 5th floor of MC right outside the elevator looked a lot grander than it normally does. There was a library lining the hallway, with towers of bookshelves lined against glass walls, and dim fluorescent lighting flickering in the distance. Two of my friends from MathSoc were chilling outside the elevator. We'd head to Council together, and Council would proceed as usual.

10/10 — I love manifesting new floors of MC! It's a shame I didn't get to see the coveted MC 9th floor along with the 8th floor though…

LOG N

MathSoc was running in log(n) time. I don't know how this one works. Don't ask me. I was doing a CS assignment right before I fell asleep and I think I was dreaming about my assignment.

log(10)/10 — I mean, at least MathSoc is running efficiently?

MC ASBESTOS SHIPMENT

I was chilling in the MathSoc Office with some of the office staff. The office now had salt dispensers. One was labelled as Alumni Salt, and it was filled to the brim with Himalayan Pink

Salt. The other one was regular-use salt, and it was regular white table salt. But the salt isn't relevant.

What is relevant to the plot of the dream, however, is the fact that a mystery cardboard box showed up in the office. The office staff gathered around the box, cut it open, and lifted the edges. It was full of… asbestos???

We all backed off and held our breath. I decided I would pop over next door and ask Rose, MathSoc's Business Manager, what to do when such a delivery showed up in the office. I don't think I ever got to show up to her office and ask her for her advice, though, because I woke up.

7/10 — An entertaining story overall. The salt dispensers are interesting, and the dream is very on point for MC.

labyrinth

MAJOR_TOM

Join the voice call, major_tom
Join the voice call, major_tom
Let your mic unmute and put your headset on
Join the voice call, major_tom
Invite sent, now ready up
Check your corners and remember not to suck
This is party chat to major_tom
You're really making plays
The spectators want to know which hacks you use
Just don't fuck things up for us now in round two
This is major_tom to party chat
I think we've clinched the dub
Please tell the other team to learn to play
And then tell them that my mother isn't gay
For here
Am I in a Herman Miller
Shitty student dorm
Monitor's gone blue
And there's nothing I can do
Though I'm past one hundred FPS
My case is feeling warm
Even though we have a single round to go
Tell my Discord kitten Daddy's feeling low
Party chat to major_tom
You're lagging out, there's something wrong
Can you hear me, major_tom?
Did you check your mic is on?
Should we start another call?
Should we?
Here am I in a Herman Miller
Shitty student dorm
Monitor's gone blue
And there's nothing I can do

David Bowie (ft. Dick Smithers)

DISCORD USERNAMES

Ever since Discord had the update which required everyone to have unique usernames, I've been stuck in perpetual username limbo fueled by indecisiveness and my username being taken despite my account being created in 2016. Here are a couple of rejected usernames that my friends and I have brainstormed:

- BreadBird
- DoughFowl
- GenshinImpact
- SupportDiff
- railmefrombehind
- submissiveandbreedable
- xx_Muffinz_xx
- makeawishfoundation
- itsanobligation
- vergilchairtaxevasion
- essenceofmicrowave
- judgementcbat
- about2morb
- morbinout
- activatemelanthaskill
- iloveleagueoflegends
- fumotivated
- luminefromgenshinimpact
- meeeeeeeedicccccccc
- ultrafortressanimalcry5monke
- lastpatheticcard
- kazumakiryuhasneverkilledaman
- canicrushyourballs
- stingerspam
- doorstuckdoorstuck
- 2bsass
- checkyouremails
- drekarping
- pitbulling
- youknowigotthatdawginme
- imnotgonnadoitchat
- iminthewalls
- ifyoureadthisyouaregay
- cocknballtorture
- preganante
- childeabuse
- thatswhatthemaskis
- breakdanceonmycorpse

and last but not least,

- chatgptismygirlfriend.

Since my friends obviously want me to get bullied and I have nothing to lose, give me some usernames I could use: bit.ly/3C32Y09.

warrior1rules

N MOMENTS

I've lived through so many things that I want to keep forever. Some with people who I'm glad have left, and some with people who I want in my life forever. Given time, most of them fade to the back of my memory, leaving echoes *just* loud enough to occasionally draw my attention. When I visit these memories, I remember what it's all *for*. Not a perfectly placed tableau, not the abstract elements, but all these people who are important enough to make a moment matter.

All of these are filtered through feelings. Some hurt a little — they come colored by regret about people I've hurt, lost, or just drifted away from; others make a sense of longing, missing a simpler time or people; and most come with nostalgia, joy, and satisfaction. No matter what they come with, I'm so glad I keep them, and nothing can explain *why* better than a small subset of the list.

- Playing chess with the wisest man and best grandpa in the world, losing again and again, until I finally learned patience. Making schnitzel with him, and hearing all about his life, marveling about how different it was. I was too young to truly appreciate it, but I knew that, and knew I wanted to become someone who *got it*.
- Slow dancing with my first crush right after he turned me down. The Spanish version of a song we'd learned to waltz to in English in the background, but all I could focus on was him, his face, and his voice, and his hands around me. I was ok with him not loving me, because having him there was worth everything.
- Sitting on a bus home from a graduation trip, talking about the butterflies and rides and drinking the first French Vanilla of my life. They all landed on me! It may have been because my sweater was bright, but I was so happy I *glowed*.
- Being announced as a finalist at national championships, and realizing that I had accomplished something really, truly, and genuinely impressive. I had worked at something I cared about, and done something with it. I was proud.
- Meeting someone new on the first day of high school and texting her until after midnight. I had made a friend. That used to be so hard for me, and it came so easily this time. I went to bed happy, for the first time in a long time.
- Mom, laughing so hard she can't talk because of a joke I made. Her laughter made me laugh, and those seconds were precious.
- Calling her when the world was wrong, and hearing her voice making it right. She was who I needed.
- Modelling for an art club, we were holding the stupidest pose and both of us were shaking, but willing to suffer for the artistic vision. I think those sketches are still up.
- Finding a blank wall at the AGO and making a video where we talked like the blank wall was an art piece. We did such a good job playing pretentious assholes.
- Saying goodbye on a phone call and staying on it for seconds or minutes or hours longer, because I wanted to keep seeing her, and she wanted to keep seeing me. I was in love, really in love, for the first time, and it was everything.
- Someone wrapping bandages around my arms. I felt safe. I don't feel safe very often. I'm grateful every day.
- Dancing together, on an icy parking lot, moonlight and stars over us. I don't know how to skate and you caught me; as you slipped, I caught you. You're going to be in my life forever, and I'm so lucky for it. You were there on the porch as I bawled my eyes out.
- Watching fireflies in Waterloo Park, stunned into silence when we could normally talk forever.
- Watching fireworks together on Canada Day, the crowd around us vanishing against the lights in the sky. I said that I loved you, and that I knew I did because there was nobody else I would rather share that moment with.
- Everyone singing "good 4 u" in my living room, three or four instruments being played. I remember thinking that, no matter how much something hurt, I was so lucky to have people who would come and do this with me.
- Seeing your band play, and being forever in awe of all of you.
- Saying "I love you", and hearing you respond the same in a whisper, because you have so much trouble saying it; but cherishing that you chose to say it to me.
- Hosting a dinner, looking around, and realizing I love everyone in the room. Treasuring that these people allow me into their lives, and that they're sharing this meal with me.
- Hearing a new song in your bed at 4am, after too many hours of conversation. Knowing that what we had wouldn't last, but that it was good anyways. I knew I wanted to keep it, and wrote myself a little note: just your name and the name of a song.
- Saying goodbye at the airport, and saying and hearing all the ways we love each other. Being so happy about the time we shared, not knowing what it would look like going forwards, and for the first time ever, not being scared of that.
- Laughing about the stupidest joke in a D&D session, giving an accent that completely mismatched a character's description, and it putting us all in stitches.
- Talking about the mansion we'll live in when we're old and grey, being so sure we'll keep each other around forever.
- All of us singing at the top of our lungs in the car, songs that bring us back to childhood and parties and everything else.

- Holding you before we sleep, treasuring that you feel safe enough to have me there, and, for the first time in weeks, feeling my brain slow down enough that I could sleep peacefully.

Here's to another N.

Golden

LIFE BEFORE DEATH

Hundreds of people gathered outside Dana Porter library to hear Vivek's canned remarks two Thursdays ago. Around eighty remained for the rally at Hagey Hall. Fifteen remained to walk into the sunset.

Could we return to what was? Some reopened the safe spaces we'd closed in fear. Others knew it could not be a safe space for some time; leaving to roam the city in search of somewhere safer.

Walking back into that space, there was unspoken grief. This place, once a guarantee of security and love, was now a target on our backs. Our second home, our shared third place, visibly the same save for the internal bruise that kept so many away.

Over the next days the bruising would manifest.

- "My campus feels unsafe."
- "This university does nothing for us."
- "It has become a risk to exist."
- "I'm lost."
- "I always felt like I couldn't come out. Now I know."

Fear remains. Queer gatherings continue across campus, but we're more aware now. We count the doors; any less than two exits has become a place of danger. We chart the paths through the room: Where is cover? Where are weapons? Where is safety? My friends sit around a table playing a board game; one has to put his back to the door, trusting in the others to watch for him. It's not said, never stated, but the undertone remains.

We leave these spaces and it's worse. Walking home invites harassment on those without a change of clothes. Buses become cages, forced into the ring unwillingly, subjected to abuse without escape. Ring Road is nightly patrolled by strange men asking to know if you "support the LGBT". One wrong turn and you encounter either overt hate or ill-meaning inquisition.

The rainbow only emerges from a storm. That storm has crept closer without our realizing.

But what do we do? Retreat into the darkness? Take down the pride flags, abandon the spaces we've worked so hard to carve?

Detransition?

If this university only taught one thing, it would be strength. Every one of us has stood resolute through seemingly insurmountable demands. With the state of Waterloo's supports, you've stood largely alone.

So stand.

Last week showed us that the culture war has come home. Now is the time of strategy. Now is the time of intentionally seeking safety while advocating for cultural change. And, terrifying as it may be, now is the time we must stand more than ever.

There's a gray world where we give up. Where we don the names of our fathers, marry the partners our mothers select, going through all the motions of societal expectation. And in this world, we are dead while alive.

I refuse that world. Life before death.

molasses

N THINGS MY FAMILY SAID ABOUT WATERLOO'S WATER

- The water tastes bad.
- The water tastes bad.
- The water tastes bad.
- The water tastes bad.
- The water tastes bad.
- The water tastes bad.
- The water tastes bad.
- The water tastes bad.
- The water tastes bad.
- The water tastes bad.
- The water tastes bad.
- The water tastes bad.
- The water tastes bad.
- The water tastes bad.
- The water tastes bad.
- The water tastes bad.
- The water tastes bad.
- The water tastes bad.
- The water tastes bad.

boldblazer

I put this here just so I could fill this column.

A TIRED mathNEWS EDITOR

SUPREME AGAIN

RE-BECOMING THE RULER YOU NEVER WEREN'T

A while back, I wrote an article[1] about the PC strategy game *Supreme Ruler Ultimate*. My final verdict was that the game was very deep and complex, with a lot of labor put in, but wasn't actually fun enough to justify the effort.

The developers behind *Ultimate* have announced with *Supreme Ruler 2030*. The demo's free on Steam, so I had to take a look.

THE BATTLE OF MOSCOW

The header isn't editorializing on my part. This is the name of the demo scenario, which is either very topical marketing or in bad taste. The backstory: Vladimir Putin has died suddenly, so it's a free-for-all between the various Russian regions. I picked Moscow, which has to face up against regions like Volgograd, St. Petersburg, and Western/Eastern Siberia.

This time, there's a helpful objective system to guide my strategy, and it tells me to:

- Ally with Belarus
- Ally with St. Petersburg
- Declare war on Volgograd

There is a brief outburst of chaos. Ukraine joins the war on Volgograd's side. I find it completely impossible to manage two (2) axes of advance at the same time, and all my soldiers die. I have more in reserve, but the UI for deploying them is so laborious to use that I just close the game.

THE VERDICT

Yeah, it's pretty much exactly the same. The developers have added a few small features (your groups of units can now be assigned a leader unit they'll follow!), but by and large all the issues I had in my first article are still there. There are still so many rough edges, and if you stick your hand in there and get scraped anyway, all you find is a game far too detailed for its own good.

So, it's a annoyingly complex strategy game that isn't fun. Breaking news, I know. After the Moscow game I decided to play Vietnam, and see if there was any fun to be had in the economic game. There is, but only a little bit. You build a factory, see number go up. I had the game on its fastest speed the whole time. I could declare war and spice it up, but then it'd be back to point-and-click chaos.

So, why don't I just drop this series? I've thought about this a lot, in the process of writing this article and its predecessor. I think, in the end, this game sits between the person I am, and the person I'd like to be. Stay with me.

After playing through the new version, I looked through the forums for the game, to see if other people saw the same problems I did. They did not. They wanted more.

More indistinguishable variants of units. More complexity, more choices that paradoxically have to be made, and also don't matter. This game is not made for me. It is made for the kind of person that knows the difference between a Patton and an Abrams, and cares that one is realistically better than the other. It is made for the kind of person that wanted a 32 resource system and then decided 16 would be a "compromise".

Stats are displayed per vehicle, but some units have 54 vehicles, and others have 48, meaning you can't get the true stats for a unit without doing multiplying by a two-digit number in your head. This game is for the kind of person who thinks that is Realistic (because after all, Russian tank battalions have 48 tanks) and Therefore Good.

I wish I was this person. I wish I could derive enjoyment from sheer exposure to complexity. I wish I had the attention span to look at a list of 150 units and pick out the 18 I want, every minute, forever.

Because I love the idea of this game. I love the idea of fixing resource shortages, ordering my units and making every tiny decision that leads to success.

But, the reality of this game will never live up to that. *I* will never live up to that. Because in the end, I am a flawed human who just wants to click on countries and conquer them.

❦

I'll probably still buy the game though.

UW Unprint

1. *Becoming The Supreme Ruler*, **mathNEWS** 148.5, p. 16

PROVOST

This university has a provost. I have no idea what a provost does. I had also never seen the provost before. I do not even know what the role of a provost is. So, this makes me think that the only thing the provost does is to be one of the three people who sits at the centre of the stage during convocation.

boldblazer

I had a dream where I was an integral once.

PROF. EMILY KOZLOWSKI

WHY THE DC-10 WAS SO DEADLY

Until 2018 or 2019, one Western plane type has been bestowed unto aviation geeks like me a reputation of deadly accidents: the McDonnell Douglas DC-10. While the type would eventually attain the safety levels of most airplanes, the plane itself would suffer from a rushed development, as well as a McDonnell Douglas that desperately wanted to get ahead at any cost.

Paul Eddy, a journalist, wrote a book on the early history of the DC-10, *Destination Disaster*, which is highly recommended. There's too much to detail in this article, but I had no idea that the Nixon administration had a role in the DC-10's problems. Side tangent, but the fact that Nixon's tapes were revealed by an FAA administrator was something that I never knew before reading this book.

According to Eddy, Douglas was the star company for passenger planes. Up until 1958, most aircraft orders and deliveries were for a Douglas plane, whether it was the DC-3, 4, 6, or the DC-7. The DC-7 was particularly important, as that was considered the peak of piston engine aircraft. In fact, plans for the DC-8, a new passenger jet by Douglas which would've come out in 1958, just beating the Boeing 707 to launch, were held back to perfect the DC-7 by Donald Douglas himself. Unfortunately, that turned out to be a critical error that haunts aviation to this day.

Because when Boeing showed off their 707 (and how it would change the world), orders skyrocketed for both the 707 *and* the DC-8, which was pushed into a development crunch. A development budget of $40 million over six years would be crunched into five years, with a huge cost overrun, costing $500 million. The DC-8 managed to be launched only a year after the Boeing 707, but Boeing would run circles around Douglas, yanking away much of the passenger aviation market. Douglas' woes with the DC-9's development resulted in its running out of money, and it was forced to merge with McDonnell, creating McDonnell Douglas (which I'll refer to as MD).

With these mistakes made by Douglas, when demand rose for an airplane that was bigger than the 707 and DC-8, but smaller than the giant Boeing 747, MD saw a chance to fill the gap in the market. However, Lockheed, wanting to get back into commercial aviation, announced the L-1011, a three-engine wide-body plane to fill that same gap. Not wanting to get totally behind, MD announced the DC-10, a three-engine wide-body to fill that gap, two months later. It was now a race to release first.

In the late 60s and early 70s, the US had four big airlines: American, Eastern, TWA, and United. To gain success in the US market, MD and Lockheed were fighting to have their jet in their fleets. This was happening all over the world, but in the US especially. Eastern, having issues with DC-9 deliveries, went with the L-1011. TWA also went with the L-1011. Delta, which was not considered a part of the Big Four but probably the fifth-biggest airline in the US, went with the L-1011 as well. Shockingly to Lockheed, American went with the DC-10. One request that American had for the DC-10 while it was in development, which was seemingly minor, would have huge consequences for the DC-10. While MD engineers suggested hydraulic actuators to close the rear cargo door, American Airlines engineers thought it would be better to have electrical actuators, as they would be lighter.

United, which was the largest airline outside of the Soviet Union, was pressured to choose the L-1011, especially by Eastern and TWA — partly because United would've gotten their jets later, but also because that there was a belief that the L-1011 and DC-10 could not co-exist. Despite this, United went with the DC-10, because of the belief that choosing the L-1011 would've killed the DC-10, and MD in general.

While Lockheed was plagued with problems in development, MD rushed the DC-10 to launch first. American would be a launch customer, and the fifth DC-10 ever built would become American Airlines Flight 96 (AA96).

In the rush to launch the DC-10, MD decided to not change the design of the rear cargo door, despite a ground test in 1970, where the cargo door blew out, causing the cabin floor to collapse. This had dire consequences. Besides the obvious horror of the possibility of people falling out through the hole, the cabin floor also housed cables to control the tail engine and the hydraulic controls of the tail.

AA96, a flight from LA to New York via Detroit and Buffalo, would suffer these problems when its cargo door blew off after take-off from Detroit. Luckily, the plane was pretty empty (only 56 passengers for about 250 seats), so no one was seated over the cargo door. Also, when the floor collapsed, it did not have as much weight, so the cables did not sever. The rudder was still jammed to the right, and the tail engine refused to respond, but they still had enough control to return to Detroit.

While the NTSB found the cause, and recommended the FAA to force MD to fix their plane, they did not do so. Richard Nixon appointed his lackeys to the FAA, which gave lots of "freedom" to corporations. So, when the FAA contacted MD about their faulty plane, they had a "gentleman's agreement" to merely "recommend" MD to "fix" the door, rather than force them to redesign the plane. After all, forcing MD to fix their plane so early into its life would be terrible for business.

However, this would have dire consequences. Without the force of the federal government, oversight of the "fixing" would be lax, and work that was claimed to have been done on some DC-10s was falsified. These DC-10s, after being unexpectedly left within the factory grounds by a bribed All Nippon Airways, were sold to Turkish Airlines. One of those planes would turn into THY981.

To be continued in the next issue…

lwo

THE GREATEST MOMENT OF MY MIDDLE SCHOOL CAREER

A LONG AND AWKWARD THANK-YOU TO URI GOLDMAN

How do I begin to describe Uri Goldman?

Uri Goldman has a cheeky smile. He's got black hair (I think? I can't remember anymore) and a pleasant face. He's Jewish and has a bubbly, good-hearted cousin. To me, he was the popular kid all through high school, and he was the definitive hottie who *I* discovered *first* in grade 7—back when he still had braces and didn't have abs. Uri Goldman was my first love.

I have had lots of relationships in my life. Oh boy, have I fallen in love. I'm still in love now—especially with people who I shouldn't be. I've had open relationships, long-term commitments, friends with benefits, rebounds, hook-ups, dates, and (almost) marriage proposals. I've met men and women who understood me on a profoundly deep level. Uri Goldman and I did not share a deep understanding. We hardly even said a few sentences to each other in six years of attending the same school. Compared to the loves I've had and lost, the ones who made me cry, the one who left with a useless promise and a goodbye, the one who tortured me, the one I tortured in return—compared to all my memories, Uri Goldman means nothing to me right now. How could he?

But I had a crush on him. And he was my first crush. I was in love, right? Wasn't it love, to fall in love every time we walked by each other in the short hallway on the way to science class? To imagine and re-imagine for hours alone that moment he winked at me, or maybe I just thought he winked at me?

Maybe he knew. Maybe he knew and didn't care. Maybe he knew and felt a nice validation. I hope so. It's nice to feel validated. Maybe he didn't know at all. Quite frankly, I don't particularly give a crap. This was grade 7. Like, seriously, are you shitting me? How ridiculous I am for thinking about him in this moment! My crush on him was very stupid, and young. But he's a person too. And probably a nice one. Or maybe not. I honestly really couldn't tell you. But I hope he's a nice one, and that he grew up and became a good man. Maybe he's in love with someone too right now, and they bring him happiness. Maybe someone broke his heart and he's just living day to day until he can manage to think a little less of them. Maybe he's figuring things out, and perfectly satisfied where he is on his own, ready for the next adventure of life to happen. Point is—Uri Goldman is definitely not in my life right now, nor I his. And that's fantastic! Aside from me getting a wild inspiration to write this article right now when I should be studying, his name and face are not thoughts in my head. I cannot imagine what is in his head right now.

But a version of him, the one I came up with in my daydreams (sorry Uri), did change me. He made me passionate, and dreamy, and he gave me a little bit of that happiness that we all look for. Having never had a boyfriend at that time, everything felt new. How would I act with the love of my life? A real-life *middle school boyfriend*! What would I say? I imagined how much love I could give him, in the most innocent way possible. In my head, we were sharing something special between two humans who felt everything with fresh, unbruised hearts.

So I guess this is my thank-you note to a person and a life that never happened and never needed to happen. I will (probably) never talk to Uri again. I will never kiss Uri. I don't particularly want to (aside from my regular baseline horniness). We've all had our secret crushes, the ones that don't matter in the end, the ones that remain unspoken except maybe to a close friend at the time who forgets these details just as quickly. I know that Uri Goldman is a character long gone from my life, and that I'd been completely fine with deciding that there was no one I would ever tell about this crush of mine. Maybe my friends would care enough to hear this, but I wouldn't care to say it. It doesn't matter. No one in this town would even know who the hell I'd be talking about. No one could really understand the gravitas of me liking Uri Goldman and him not really knowing or caring that I exist, how much that mattered and how much I wanted it to matter. That gravitas is long gone, too. But! In the true spirit of **mathNEWS**, I thought: "what the hell." Wouldn't it be really funny if, instead of carrying on and never really thinking about him again and doing my own important-unimportant life things until death do us part like every other normal human being, I'd publicly recount this crush, this crush that was the dearest and most embarrassing part of my life once upon a time in a different universe? We were young once, Uri and I.

Weren't we, Uri?

❦

One day in middle school, he asked me if I thought he was hot. He must've been joking with his buddies and seen me. I'd been painfully aware of his presence when I was walking by in the hallway. My cheeks blushed hot red. "Uri…" I began, lost in my mind, with no clue how to continue. This was it. My crush was discovered. The world seemed to end momentarily. The moments of pure silence dragged on, and there was no getting out. Around us, the students filing through the hallway were a blur. I heard the answer that came out of my mouth before I thought it.

"Keep your panties on."

and I left.

Young & stupid

To avoid being totally creepy, the name is obviously fake.

N COOL SONGS I FOUND RECENTLY

"COULD HAVE BEEN ME" BY THE STRUTS

The reason this song caught my attention is the way the singer says "wrapped"—it's like "wr-r-r-r-rapped", trilling over the r like some sort of a motor. It's a great attention-grabber! But that alone isn't enough in a song. Once I really listened to it, the lyrics resonated with me *extremely* hard—you could say it moved me like a motor would. Something about living life to its fullest potential and making sure you never have any regrets speaks a lot to you when you're in the "I didn't live life to my fullest potential and have a lot of regrets; time to fix that" era.

Shoutout to this one lyric:

> *Don't wanna wake up on a Monday morning,*
> *The thought of work is getting my skin crawling.*

🤪

"A GOOD SONG NEVER DIES" BY SAINT MOTEL

The tune starts off with a hint of… Megalovania?, and transitions into something that feels quite reminiscent of a detective theme song, with a rising sense of urgency and something that sounds almost-but-not-quite like police sirens. The way the lyrics are delivered also feels quite in line with the detective vibe. The actual content of the lyrics, however, doesn't really say much—other than the hook and chorus, which talk about how, well, a good song never dies. And it should know! It is a good song.

Shoutout to this one lyric:

> *Make the caffeine be your weaponry.*

😋

"THE MAN" BY THE KILLERS

This song is quite simple—both the vibe of music and the lyrics convey the air of a level of confidence only attained by a tall, well-built white man driving across the United States in his 1950s Cadillac on a clear, sunny day.

Which is why what I want more than anything is to see a drag queen dance to this with the most overtly feminine dress and dance moves. Maybe someday, if no one else does it…

Shoutout to this one lyric:

> *USDA certified lean.*

😏

"SWAY" BY MICHAEL BUBLÉ

This song was actually recommended to me by someone at Renison, and I'm so glad that they did what they did. When I heard the song for the first time, I was 100% sure that I had heard this exact same song before, just in Hindi instead of English. Something about the tune just screams 1970s Bollywood like no 1970s Bollywood song ever did. The extravagant, almost pompous music, accompanied by the guy's suave, drawling voice, make you want to do exactly what the title says, and just gently sway.

This song is based on the Mexican song, Quién Será, written by Luis Demetrio and Pablo Beltrán Ruiz for Pedro Infante. Dean Martin later stole the tune and wrote new English lyrics, creating Sway, and Michael Bublé covered it later (among other people). I've listened to all major versions, and not gonna lie, Michael's version is the best.

Shoutout to this one lyric:

> *Like a lazy ocean hugs the shore,*
> *Hold me close, sway me more.*

🥺

"ADIOS" BY JAWNY

I picked this up at the gym lockers. Not kidding—this song plays semi-frequently in the PAC changing rooms, and I heard this often enough while going swimming that it eventually got stuck in my head and I had to Shazam it.

The song is pretty standard pop-music-fare, but it's the perfect background music song for working—it's upbeat and moderately fast and energetic, without being overbearingly loud and attention-grabbing. And if you *are* paying attention, the chorus has one of the most enjoyable payoffs to singing along—you'll catch me humming this song unconsciously quite often because it just *feels so good* to hum along.

Also, the music video is fantastic. It makes me queasy, but it's fantastic.

Shoutout to this one lyric:

> *And now I feel like a blackout, New York city grid max out…*

🫠

tendstofortytwo

I don't do "free". You couldn't afford me.

PROF. BLAKE MADILL

THE WELL-ROUNDED WATERLOO GRADUATE

is someone who enforces his view

with the point of a blade.

and someone who lived and breathed UW for a third

of his thinking life,

someone integrated with our culture, our campus, our way.

their product, completely

it's someone this university is responsible for. someone this university had time to redirect, to reshape, to point

at better passions. when he fell through any cracks, it is this university

that opened them. if he was isolated, the university's culture of

fetishization

of self-harm[1] has pushed him. when he was hateful, it was this university that

never connected him.

we are all responsible for our own

actions. his hateful acts

are his alone.

but he only graduated one month ago.

and we want to believe he was a fluke in the formula,

we are all the rule

but I wonder

if we've built an environment where he is the rule,

and you and i

are beautiful exceptions

molasses

1. inspired by hotfemoid, who has put this into words i do not dare compete with. https://hotfemoid.substack.com/p/believe-it-or-not-the-suicide-school

M THINGS MY FAMILY SAID ABOUT WATERLOO'S WATER

- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.
- The water feels so rough.

boldblazer

Ever wonder how much filler is in a given issue of mathNEWS?

Just count the number of items in all the "N Things" articles.

Oh, and these little blackBOXED quotes.

A mathNEWS EDITOR WHO JUST WANTS TO FINISH LAYOUT AND GO HOME

OOPS NEW gridWORD

gridCOMMENT *152.4*

helo, and welcome back to a brand new episode of **gridWORD**, starring me, wink wonk, and you, my lovely **gridWORD**ers :o

excellent work everyone!!!1!1!11 you are all so amazing and fantastic (and amazing :0) and i am always very proud of my little **gridWORD**lings!!1!1!!! last time i asked, "who want lasagna?" to which you had said:

- awmlet: *garfeled lasgna wantt*
- sunnnysideup: *not to be cheesy but me :)*
- terminal: *This response is sponsored by Hello Fresh which offers a bunch of different meals each week including lasagna. Head on over to hellofresh.com and use promo code GRIDWORD for up to 69 free meals plus free shipping.*
- aaaaaa: *not me, but if you want some we can make you a small one*
- spaghettiinhalers: *who want lasaAAAGH PAA*
- Teehee Police: *me*

thank you for your offer aaaaaa, your generosity is rewarded with this issue's prize!! so please come by MC 3030 (**mathNEWS** office) when possible to collect it. to teehee police: please forgive me :'(, and to terminal, close! but it was actually **pee**, not **tee**!!!

this time i ask: "me and who?" please send answer, with solution and pseudonym to mathnews@gmail.com by july 17th at 6pm. also note: this issue is very **greek**

have a wonderful gangnam style, and see you next time!! :000000

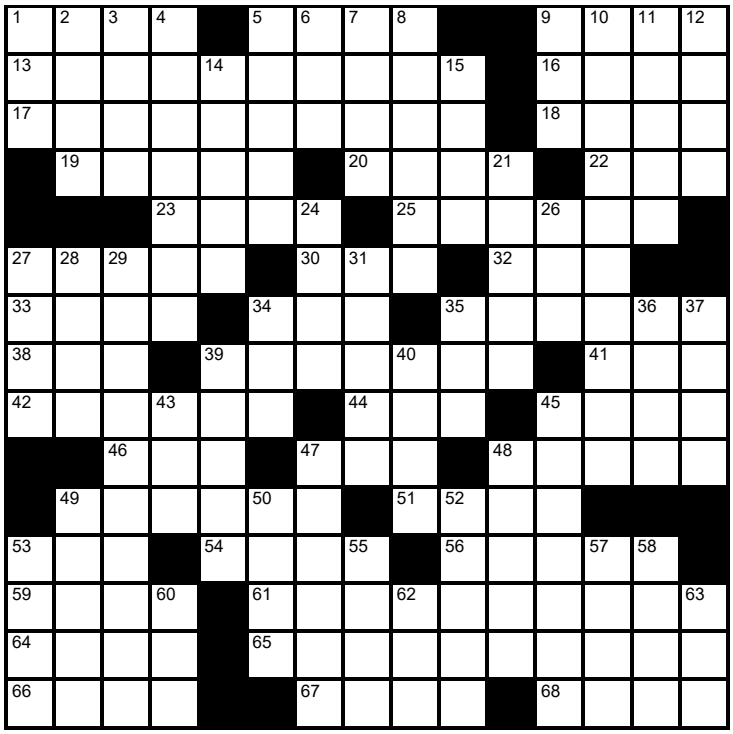
Wink wonk

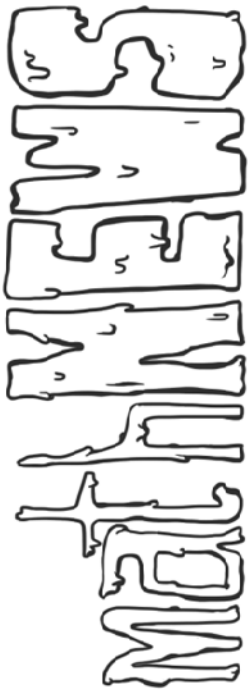
ACROSS

1. Musical finale
5. In the past, in the past
9. Barely gets, with "out"
13. Plant named after William "Forsyth"
16. "Green Gables" girl
17. Chocolate addict
18. Drop from the eye
19. Enliven, with "up"
20. Major work, with magnum
22. In-flight info, for short
23. Drive-___
25. Like some mushrooms
27. Salad oil holder
30. Greek letter*
32. #26 of 26 (in America)
33. Geiger of Geiger counter fame
34. Mom-and-pop org.?
35. Court contest
38. Aged
39. Dr. Scholl's product
41. Figured out
42. Cotton-eating beetle
44. French vineyard
45. One of four Holy Roman emperors
46. Actress Courteney
47. Greek letter*
48. "Don't give me that!"
49. 4th most spoken language in India
51. Bleak, as an outlook
53. Greek letter*
54. Elastigirl, Helen ___
56. High up
59. Great review
61. It can be full or partial
64. Mine finds
65. Makse Soviet in structure or style
66. "Check this out!"
67. Hot Springs and others
68. Escape, in a way

DOWN

1. Ozone-depleting compound, for short
2. ___ and aahs
3. Let go of
4. Fluid collection in abdomen spaces, condition
5. Early anesthetic
6. Greek letter*
7. Fodder holder
8. Taiwan capital
9. "Dig in!"
10. Like kilts
11. Related on one's mother's side
12. Hospital supplies
14. Marina sight
15. Gulf war missile
21. Evaluated, with "up"
24. "What've you been ___?"
26. London's Big ___
27. Dog with a blue-black tongue
28. Chest sound
29. Tells (someone) that an idea is mistaken
31. Down the ___
34. Campaigner, for short
35. Greek letter*
36. Greek letter*
37. Pack
39. Renovate
40. Moralistic person who behaves as if superior to others
43. TV control: Abbr.
45. BIOL130 topic
47. Stranger things?
48. Kitchen light
49. Ivan and Nicholas
50. ___ about (roams)
52. Plural of 28 down
53. Support, with "up"
55. Invitation request
57. Detonator
58. Branch headquarters?
60. "C'___ la vie!"
62. Spy's org.
63. Sixth sense, for short





lookAHEAD

SUN JULY 9	MON JULY 10	TUE JULY 11	WED JULY 12	THU JULY 13	FRI JULY 14	SAT JULY 15
	World Filing Cabinet Appreciation Day		Cycle #3 postings open	PMAMC&OC Short Attention Span Math Seminars National French Fries Day	Bastille Day	Saturday

SUN JULY 16	MON JULY 17	TUE JULY 18	WED JULY 19	THU JULY 20	FRI JULY 21	SAT JULY 22
	mathNEWS 152.5 production night	Drop with WD ends	Drop with WF begins		**mathNEWS** 152.5 published	

LAST ISSUE'S gridSOLUTION

T	I	T	T	E	R	■	S	T	E	E	P	L	E	S
I	D	E	A	T	E	■	H	E	A	D	I	E	S	T
P	E	E	V	E	S	■	I	N	T	O	N	A	T	E
I	N	H	E	R	E	■	P	E	E	■	■	F	E	E
S	T	E	R	N	A	■	S	T	R	E	A	M	E	R
■	S	E	N	A	T	E	■	■	■	G	N	O	M	E
■	■	■	■	L	I	M	P	■	C	O	O	L	E	R
C	H	A	T	■	N	U	R	S	E	■	A	D	D	S
R	I	D	I	N	G	■	O	U	R	S	■	■	■	■
A	G	O	R	A	■	■	■	M	E	T	R	O	S	■
C	H	R	O	M	A	T	E	■	B	E	A	T	U	P
K	E	A	■	■	L	O	W	■	R	E	S	I	D	E
U	R	A	B	N	I	T	E	■	A	R	I	O	S	E
P	U	L	L	O	V	E	R	■	T	E	N	S	E	R
S	P	E	E	D	E	R	S	■	E	D	G	E	R	S

PMC WEEKEND NEWS?!

C&O PROF TALK

- **What:** Professor Levent Tunçel will be giving a Prof Talk on convex optimization. Snacks for members!
- **When:** July 10th at 5:30 PM.
- **Where:** MC 2038.

SHORT ATTENTION SPAN MATH SEMINARS (SASMS)

They're happening again! Last term it was 24 hours. That's never happening again. Not under my watch.

- **What:** 25-minute talks given by students. Dinner for members!
- **When:** July 13th and 27th at 6:30 PM.
- **Where:** MC 4021.

Hope to see you there!! 🍔

Evan Girardin
President, PMAMC&OC

You should ~~write~~ be an editor for mathNEWS.

I swear it's not as bad as we make it sound. I promise! Please apply.

A mathNEWS EDITOR WHO WANTS TO ~~GET THE HELL OUT OF THIS MADHOUSE AND RUN~~ DEFINITELY SECURE THE FUTURE OF THE PAPER