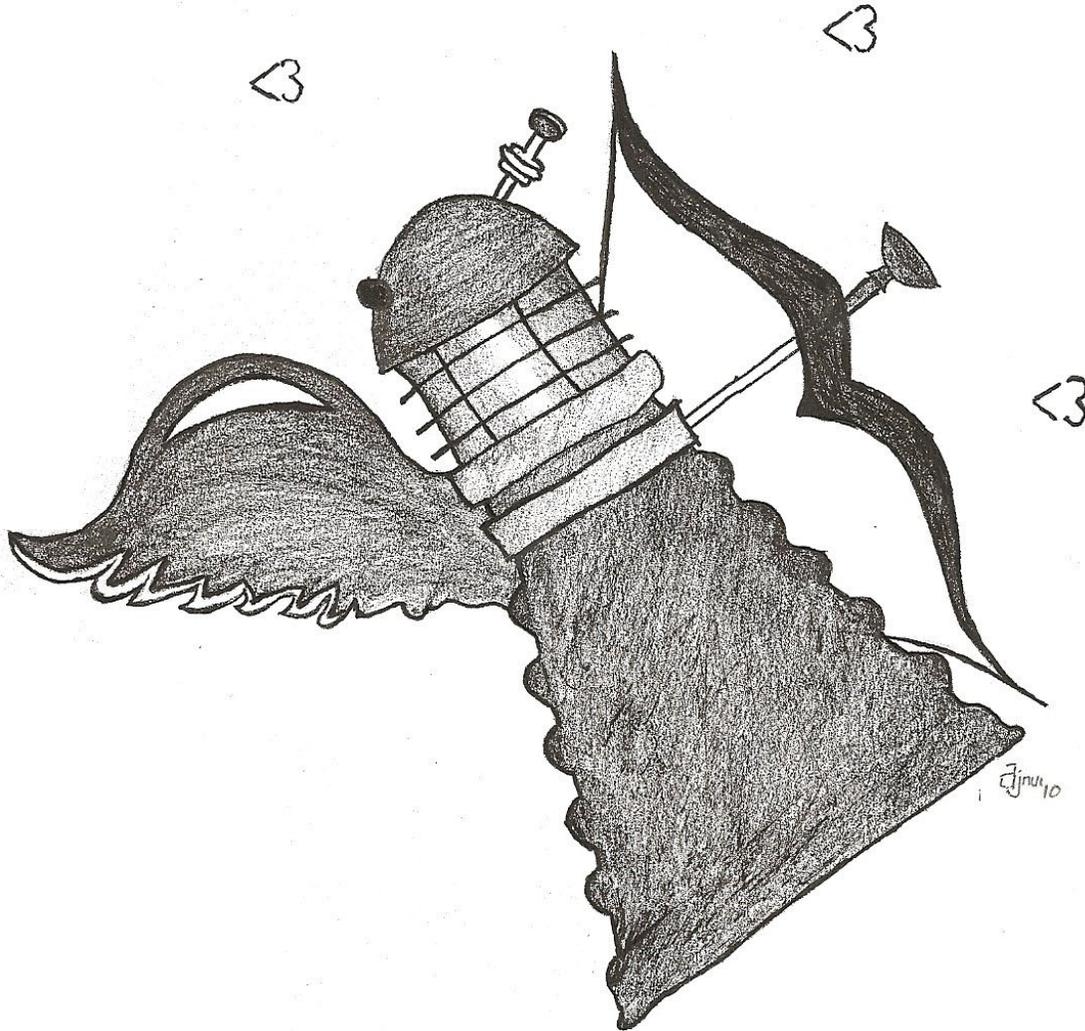


# *math* NEWS

Volume 112, Issue 3

Friday, February 12th, 2010



EXTERMINATE! <3

*Even Daleks Need Love*



**lookAHEAD****mathNEWS**

February 12th	Issue #3, will you be my Valentine?
February 22nd	Issue #4 production night 6:30 MC 3038
February 26th	Issue #4 is counting the days ...

**MathSoc**

Wednesdays	Games night at 7pm in MC 3001
Thursdays	Movie night at 7pm in MC 3001

**Math Faculty**

Ongoing	Orientation Week applications
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**CECS**

Ongoing	Did you remember to apply for jobs?
Ongoing	Career Workshops, check CECS homepage

**Miscellaneous**

February 26th	Google AI Challenge ends
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**Orientation Week!**

Hey Mathies!

Want a way to meet new people, gain leadership skills, improve your organizational skills, and just be awesome\*? Math Orientation 2010 is now taking applications! Apply today at: <http://orientation.math.uwaterloo.ca>

We are looking for people just like YOU to make Orientation 2010 the best Orientation week ever!

Have questions? Feel free to email us at [orientat@student.math.uwaterloo.ca](mailto:orientat@student.math.uwaterloo.ca).

Patrick, Julianne, Abhishek, Maria  
Math Orientation Directors  
University of Waterloo  
[orientat@student.math.uwaterloo.ca](mailto:orientat@student.math.uwaterloo.ca)

\*awesomeness covers the aforementioned improvements/gains and much, much more!

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The editor(s): John Stevenson, John Baxter, Rami Finkelshtein

**mastHEAD**

Howdy concerned readers!

With Reading Week coming up, and many midterms shortly afterwards, I'm sure everyone has a little voice in the back of their head saying "WTF dude! Why are you in *insert program here* and not *insert arts!*?" Although your sense of reason is telling you not to listen to the little voice and then babbles on and on about the importance of hard work and potentially getting a job or at least marketable skills, you'll probably just tune it out. That's when the third voice starts asking you in a soft voice why there are people in your head talking to you, and that you should really sit down and take a nap. And then the fourth voice tells you that you might have fun burning the *insert building* to the ground.

In short, Reading Week is coming up and you are feeling a little schizophrenic and worried about the direction your life may (or may not) be going in. To remedy this, I strongly suggest you start to re-evaluate your life, clearing out the clutter of family and friends in favour of the important things like WarCraft and midterms.

Seriously though, stop freaking out. They are only midterms. They only happen once or twice a term. You will survive long enough to forget them and the marginal effect they will have had on your life.

But, really, what do you want to be when (and if) you grow up? I always include the if because I intend to stay immature forever!

"BIGGER, SHARPER, AND HAS MORE KNIVES" (!case), "A cat." (!cho), "The Y-Combinator" (snippet), "I want to be a recursor who wants to be a recursor who wants to be ..." (Tbor), "Retired" (Angelo), "Stephen Fry" (Williver Hendry), "I want to be the destroyer of worlds, devourer of souls, and baker of delicious cookies" (Sector Corrupt), "I want to travel around the world in a biplane solving mysteries." (Thor), "I'm already grown up, but I still don't know" (perki), "The Z-Combinator" (CS 442), "I want to be the King!" (The Hee Ho), "The King's Grand High Technomancer" (Image), "I want to be a child ..." (Unja), "Add science to it and kaboom!" (butters), "Hugh Laurie, Stephen Fry's nose is crooked" (prime8), "exhausted, post-coitus." (prime8(+1?)), "Someone who writes an article in every issue of *mathNEWS* for a given term." (!able), "Happy and married. Or just happy." (cbhllhbc), "House, because Hugh Laurie is real." (42), "Calligula" (The Unnatural Historian)

ImpulsED

"When I grow up, I want to be a glass of milk!"

**Vamp Ire**

Riots broke out in several small towns in the Carpathian Mountains last week. Apparently the populace were deeply offended by the musical score to the movie *New Moon*, which debuted in Europe on Monday. A vamp used during several transitions throughout the movie allegedly "Made a travesty of the Romanian National Anthem", according to irate movie-goers. In this reporter's opinion, the two are too dissimilar to bother getting worked up over.

—image

## Welcome Week

Did you love Orientation Week? Well you are going to love Welcome Week! Yes, UW is holding their second annual Welcome Week for you - all of the undergraduates of UW. Falling on the first week of classes, Welcome Week is free events and prizes for all students. Remember last year... Free Pancakes on the Monday of Classes, karaoke in the Bomber, an Amazing Race through campus, and a Friday Night Concert (just to name a few). This year we are planning to make it even bigger and better - but we need YOUR help!

The Welcome Week Team is looking for Welcome Week Event Managers (WVEC) to help plan and run the events for the week. Working in teams or solo, you will be responsible for creating your very own event! Don't worry if you have not planned an event for such a large group of students before - there is a team of admin in place to help you every step of the way. If this sounds right for you, I encourage you to apply today at <http://www.feds.ca> by February 17th at 12noon.

If you have any questions, please send them my way at [uwwelcomeweek@gmail.com](mailto:uwwelcomeweek@gmail.com)

Emily Fitzpatrick

Welcome Week Event Manager 2010

## CSC Flash

In the absence of our club's esteemed Calum T. Dalek, one of the volunteers has taken up the task of informing the readers of *mathNEWS* about the events that are happening in and around the Computer Science Club.

- **CSCF Town Hall:** The Technical Manager of the Computer Science Computing Facility is giving the undergraduates an opportunity to express their frustration with regards to their student.cs accounts. This event is happening on the 25th of February, the location for which is TBA.
- **Member/Prof Talk:** Starting the end of this month, the club will be organizing talks on every Tuesday that would be given by either members of the club or by certain Professors. The details about the abstracts will be made available on the CSC webpage after the reading week, so be sure to look out for them.
- **Google AI Challenge:** As most of you might have known by now, this year's Google AI Challenge is about Tron. The competition started on the 4th of February and will be ending on the 26th. And as it stands (Monday, February 8th) we have 1100 users from all over the world. We encourage more of our students to get in there and fight! fight! fight! For details about the event check out <http://jpcameron.com/blog/>

ajacob, on behalf of:

Calum T. Dalek

Supreme CSC Chairbeing Extraordinaire



## Mathematics Endowment Fund

Become a Council member, Board member or a Director!

Looking for a great way to get involved in school affairs with very little time commitment? Or just interested in seeing how the Math Endowment spends it's money? Then you should sign up to be on the Mathematics Endowment Fund Council! Or if you would like to take up a little more responsibility, apply to be a Board member or a Director for the up coming terms. In order to sign up for any of the above mentioned positions - you can either pick up a form outside of MC3028 or print one off online from <http://www.student.math.uwaterloo.ca/~mefcom/home>. The deadline for submission is March 3rd, 2010.

Have a project that you need funding for?

Follow the link to apply before March 1st, 2010 <http://www.student.math.uwaterloo.ca/~mefcom/proposals> You will then be notified as to when the council meeting would be and you would be able to present your proposal in front of the council for consideration.

Thank you for your time.

Ajnu Jacob

MEF Director

## PMAMC&OC

### SASMS

Wednesday, March 3 and Thursday, March 4, 4:30PM - 11:00PM, in MC 2066

Come one, come all, to the Short Attention-Span Math Seminars! This is an event hosted by the PMC where students are able to give 25-minute talks on topics of their choosing. The event runs for a while, so we will provide snacks, drinks, and dinner for those attending. If you want more information, check out our Facebook event <http://www.facebook.com/event.php?eid=253321676443>. We'll let everyone know when the sign-up page for SASMS is available, but for now, you can sign up by e-mailing us at [pmclub@gmail.com](mailto:pmclub@gmail.com)

### Prof. Talk

Wednesday, March 17

As it is, once per term, we ask a professor to come and give us a talk on something that he/she is interested in, or is working on, or has done that day. This term, we've asked one Barbara Csima to grace us with her presence and talk to us about some cool things. As is the norm, we'll be providing some manner of hunger-sating material (most likely snacks and drinks). We'll have posters up as the date approaches, so keep an eye out for them.

### Integration Bee

Wednesday, March 24, 5:30PM - 9:00PM, in MC 1085

The Integration Bee is a most wonderful of events, where students of all ages (typically in the university range) and Professors (usually not the same age as the students) compete for glory in a who-can-integrate-the-most battle royale. The material is nothing a first-year wouldn't recognize, so it's free for all to attend. Also, like SASMS, we'll be providing free food. For more information, check out our Facebook event at <http://www.facebook.com/event.php?eid=256715107084>. Invite your profs to compete, or team up with a partner!

Vince Chan

PMC

## New Dean Appointed to Faculty of Math

*Ian Goulden to lead the faculty from July 1<sup>st</sup>*

UW President David Johnston announced last week that Dr. Ian Goulden will become the new Dean of Mathematics on July 1<sup>st</sup>. The recommendation was unanimous by the nomination committee, and was approved last week by the Senate and the Board of Governors.

“I was absolutely delighted to be selected as Dean of this Faculty,” Goulden told me. “I’ve been here a long time, and care deeply about the success of the Faculty and the University.”

Goulden, who is a professor in the Combinatorics & Optimization department, will be replacing Dr. Tom Coleman after his term expires on June 30<sup>th</sup>. The Daily Bulletin reported in June last year that Coleman, who came to UW from Cornell University in 2004, did not wish to serve a second five-year term as head of the faculty. It was later announced in September that Coleman will become the Ophelia Lazaridis University Research Chair, doing research on high-performance algorithms for large-scale optimization problems.

Goulden earned his Ph.D. here in Waterloo in 1979, and has been a professor in the department since 1990. He’s also been chair of the department for multiple terms, according to a memo sent out from the President’s office, and he also earned the Faculty of Mathematics Award for Distinction in Teaching last year.

Goulden has strong support from both students and faculty going into the position. “Dr. Goulden comes to the position of

Dean of Mathematics with an outstanding record of research, teaching and administrative leadership,” said Dr. Frank Zorzitto, chair of the Math Faculty Council. “I look forward to working with him through Faculty Council, and to helping him make our Faculty an even better place.”

Goulden says that his biggest challenge will be continuing to plan for the Math 3 building, which is scheduled to open next year. His biggest goal is to enhance Waterloo’s strong reputation in mathematics and computer science.

“Maintaining and hopefully increasing that excellence depends on our continuing ability to attract the best students here,” Goulden said. “I hope that we can all be increasingly proud of our Faculty’s reputation as an international center of excellence for education and research in the mathematical and computing sciences, and my goal over the next 5 years as Dean will be to enhance that reputation.”

“Professor Ian Goulden is an alumnus, an experienced administrator and accomplished leader, as well as a highly respected scholar and educator,” President Johnson said. “Professor Goulden will bring wisdom, commitment and energy to the position and will help strategically develop the Faculty of Mathematics in the years to come.”

InsideR  
mathNEWS News Editor  
Twitter: @mN\_InsideR

## News From Off Campus

There haven’t been many interesting events going on during the past fortnight, so this feature is going to be a bit short this week. Don’t forget, though, that you can comment on any of these stories and even suggest your own by tweeting @mN\_InsideR.

### *Regional Outside Workers Nearing Strike Position*

The Region of Waterloo and the union representing its outside workers have been negotiating to avoid a strike. Assuming a deal has not been reached since Monday, workers could go on strike effective Wednesday at 12:01 am.

CUPE Local 1656 is responsible for Regional services such as waste management, rural road maintenance (including plowing and salting), water supply and Waterloo Region Housing maintenance. The two sides have been meeting for the past several months, and both sides are making every effort to reach a settlement.

Both sides agreed to a media blackout, so we cannot say what the outstanding issues are.

### *Busy Two Weeks for Security Updates*

Anyone who has a computer probably had to go through a major security upgrade during the past few weeks.

Apple’s first security upgrade in 2010 includes patches for six security issues with the OSX operating system, which affects its Flash plugins, printer daemons, and SSL libraries. These issues would have allowed attackers to intercept secure internet connections and execute arbitrary code on MACs. Similar patches have also been released for the iPhone operating system, which is available on both the phone and the iPod Touch.

Several security issues were also found in versions of the Linux kernel last week, which required a rare restart of Linux machines.

Issues ranged from bad file system checking to memory leaks in kernel space, which would potentially lead to attackers gaining root (administrator) privileges or crashing the system. A Ubuntu security notice also says that any third-party kernel modules may also have to be recompiled and reinstalled.

On Tuesday, Microsoft released a huge series of patches for its Windows operating system as well as Office software on both the Windows and Macintosh platforms. The advanced notification issued last week said 13 issues were addressed by the company that would allow remote code execution or denial of service. BBC News is reporting that this month’s security update also included a fix for a DOS-aged program designed to allow older software to work on modern operating systems.

An up-to-date operating system allows users to protect their computers against all known security vulnerabilities, and it is recommended that users who have not upgraded their systems do so right away.

InsideR

## VAM Pyre

On Thursday February 11<sup>th</sup>, in a shocking terrorist attack, London’s Victoria and Albert Museum was burned to the ground. British police and Interpol are looking for those responsible, but so far have had no luck identifying the guilty party. While there were several witnesses, apparently no one got a clear view of the man responsible, on account of blinding flashes of light and distracting sparkles. The culprit has been described as tall, dashing, dreamy, and “Squee!”

—image

## Thor's CS Problem of the Fortnight

### Tap dancing around the issues of Computer Science

**Last Fortnight's Question:** In the popular city simulation game Sim City, you often find yourself needing to connect up parts of your city via power lines. Let us study a generalized version of this problem. Let's say you've got five different areas of your city that are unpowered, and you need to connect them together with lines. Power lines cost money, so you want to connect these points as cheaply as possible. Remember that you're not just limited to straight lines between any two parts of your city, though. You can add junction points wherever you want, where a line splits in two (Sim City's power lines aren't advanced enough to be curved). You want to minimize your cost of power lines, but still power your whole city. How can you determine an optimal power line layout? As an abstract representation, let each part of the city to power be represented by a dot. Your job is to connect all of these dots together with straight lines (one of the dots is the power plant) in a way that minimizes cost (length of line). You can also add dots wherever you'd like, to keep expenses down.

**Its Answer:** If you're a student of graph algorithms, you'll see my poorly veiled attempt to ask you about graph theory in the context of a video game right away. Depending on your level of experience, you might jump first to the obvious answer. A minimum spanning tree. In many cases, the obvious answer is right, but this is not one of those cases. This problem is related to the

minimum spanning tree problem, but it's not the same. I threw a bit of a hitch into this problem by being a little more permissive than you'd like. I'm letting you add your own vertices to the graph! It's an important distinction, though, because it makes this an NP-complete problem, so there's no known polynomial-time way to do this. This is, in fact, the Steiner tree problem. The Steiner tree problem (specifically, the Euclidean Steiner Tree Problem, which we deal with here) is a well-known problem in graph theory, because it applies to lots of real-world situations similar to the one I outlined about the power grid. Luckily for those of you whose first instinct was "Minimum Spanning Tree", that's not such a bad answer. MSTs serve as quite acceptable approximations of Steiner trees in many circumstances, and they're fast and easy to compute if you set the distance between vertices as their edge weight. If exactness is called for, you're probably going to be waiting for a while. Algorithms like the one described by Hakimi use brute force and enumeration of MSTs to find the answer. So make sure you're willing to put in the time!

**This Fortnight's Question:** When we are scheduling tasks on a computer, we often have the concept of task dependencies. Specifically, it is often the case that task B will be unable to complete until task A completes, and task C is waiting on both tasks D and E. Given a listing of such tasks and their dependencies, how can you figure out what order to complete the tasks in?

Thor

## Are you Graduating in 2011?

### Then you need to elect a Math Grad Chair!

This is the Math Grad Chair, 2010 here, letting you know that if you plan on Graduating in the 2011 year, then you will need a Math Grad Chair. The Math Grad Chair is responsible for getting students to help out with:

- Grad Ball
- Yearbook
- Selecting a Valedictorian
- Granting Campus Awards

One thing that you need to be aware of is that the above mentioned are not services provided for you, but they are things that you need to make happen! Start thinking about whether you want to be the Math Grad Chair for your year to help make sure that you get a yearbook, have a fun grad ball and see all of your fellow classmates off! If you have any questions about the responsibilities associated with being Math Grad Chair, then please e-mail and make sure that you get a great head start!

Michaelangelo Finistauri  
Math Grad Chair, 2010  
mathgrad.2010@gmail.com

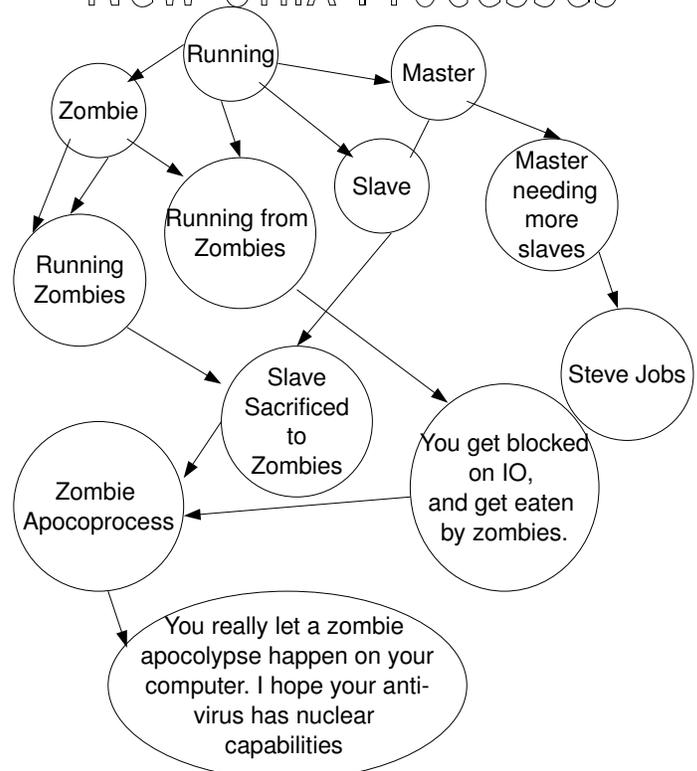
## Nipples

### Pure awesomeness...

They're super useful for drinking milk - especially for babies... Sometimes just fun to handle... They can be soft or hard... And are made of either rubber or plastic and fitted to the top of a baby's bottle.

weeeeee!  
prime8

## New Unix Processes



## Interesting Math

### Hearts

Valentine's Day is just around the corner, so in honour of the occasion (and not because I haven't had time to write a proper article), I will show you a few ways of plotting a graph that resembles a heart. The first one is standard: the cardioid. This word literally means "heart-shaped", so this should be pretty good.

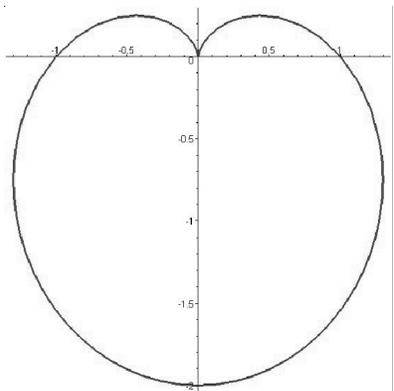


Fig.1:  $r = 1 - \sin(\theta)$

Ok, I don't know about you, but I don't find that very heart-shaped. Here are three alternatives to this round-bottomed attempt.

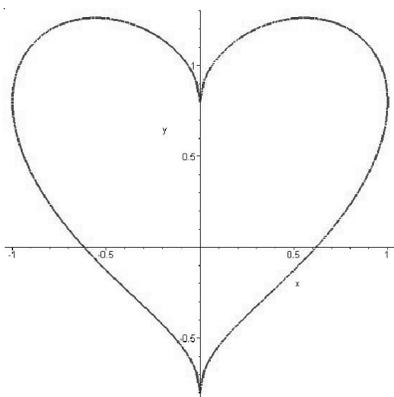


Fig.2:  $x^2 + \left(\frac{5}{4}y - \sqrt{|x|}\right)^2 = 1$

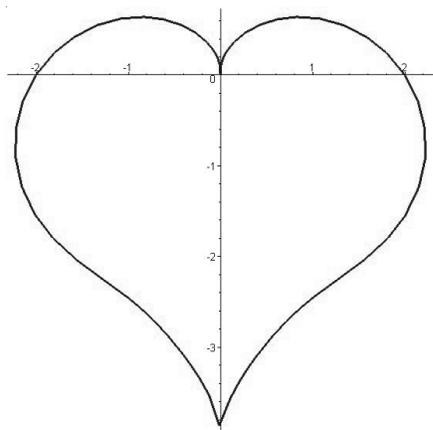


Fig.3:  $r = \frac{\sin(\theta)\sqrt{|\cos(\theta)|}}{\sin(\theta) + \frac{7}{5}} - 2\sin(\theta) + 2$

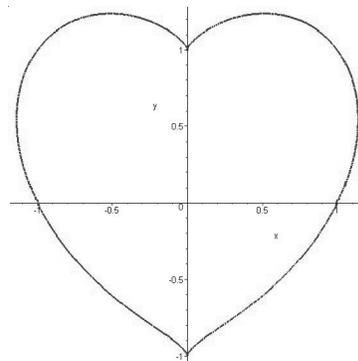


Fig.4:  $(x^2 + y^2 - 1)^3 = x^2y^3$

I like this last curve, since it is the projection of a surface that resembles a heart:

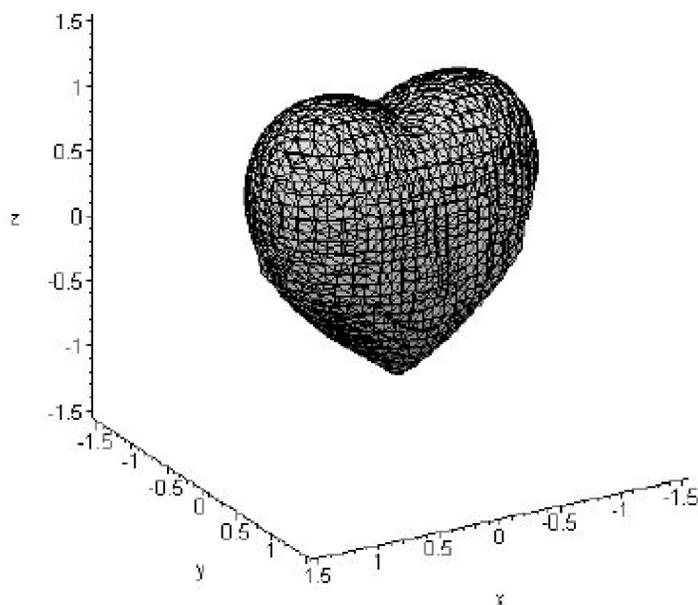


Fig.5:  $(x^2 + \frac{9}{4}y^2 + z^2 - 1)^3 = x^2z^3 + \frac{9}{80}y^2z^3$

Indeed, Fig.4 was the special case of Fig.5 when  $y = 0$  and relabeling  $z$  as  $y$ . Of course, you can play around with the constants above to get a different curve of the heart; try it out or try and make your own graphs. Impress your significant other (or find one) with your newfound knowledge... On second thought, chocolates are always a good bet.

#### Vince's problem of the issue

Find all ordered pairs of positive integers  $(m, n)$  such that  $mn^2 + n + 7$  divides  $m^2n + m + n$ .

Vince Chan  
v2chan@math.uwaterloo.ca

# BOOM BOOM OW

*To the tune of Boom Boom Pow by the Black Eyed Peas*

Gotta BLUP-BURP! (x3)  
Gotta B-B-B-BLURP BURP BURP, BLUP BURP

## Chorus

Boom boom BOOMED, gotta BLUP BURP (x4)  
Boom boom boom, ow (x2)  
Boom boom, ow (x2)

Yo I got that boom that calls the flock  
You can give that pipebomb a throw  
I got the fat that rolls  
The barf that flows  
That icky, green spit  
That'll leave you smelling like shit  
I got that boom boom now  
Melee me back, boom boom ow

I got that boom boom now  
Them Spitters jackin' my style  
They hork all over their target  
With similar, green bile  
I weigh 3008  
You all watch it fluctuate  
I got that boom boom boom  
That fat ass boom boom boom  
Watch me waddle now

Chorus

I'm going for super rocket boom  
Y'all see that fattie zoom  
When-when I barf inside the room  
Zombies go ape-shit, uh!  
Y'all stuck on common 'n shit  
That low-pow punching you bit  
I'm near that baseball bat  
That makes me boom boom splat

Imma burp when you make me spawn  
Next to the witch that's crying on  
Slower, fatter, louder, stronger  
Angry zombies extra hunger  
'Cause I got the boom that smells  
I got the boom that smells  
I got the boom that 911  
That the boom, boom when you're down.

Survivors in the place: you don't wanna get downed  
Put your hands in the air, Bill.i.am push me back now

I be puking green streams. (x2)  
Here we go, here we go, fat-elite boomeo  
Y'all gettin' hit with a boom boom  
Pukes so thick you's shooting survivors  
Hurling on y'all with the boom boom (x3)

Playing too much Left 4 Dead 2...  
The Hee Ho

## What Shouldn't Matter in an Election Campaign

*Imprint forum moderators, please take note*

One of the reasons why I chose to come to Waterloo was because of the belief that it teaches critical thinking skills. However, a recent forum on Imprint's website has shown me that I was clearly, clearly wrong.

Over the past few weeks, Imprint has been holding an internet forum about this week's Federation of Students and Senate elections. The hope was that students would log in and comment on the important issues facing the organizations. However, hundreds of anonymous trolls have visited the site and posted a number of wisdoms (take that lightly) about the candidates running.

Here are some of the more important issues according to these insightful people, which I clearly missed in making my voting decision this week:

- Memberships in fraternities or sororities, and whether or not they party
- Whether or not the candidates eat vegan food, and who exactly pays for it
- What business the poster above me owns
- Who pays "your fat mothers [sic] unemployment cheque and your alcoholic fathers [sic] welfare"
- How people react when they don't have a specific flavour of ice cream
- Criticisms of posters' use of English that don't use it properly themselves
- Encouragement of suicide
- Pictures of Pac-Man
- The sex lives (or lack thereof) of other posters
- Synergy
- Election talk at wtf-uw that makes the Imprint forums look insightful
- The current President dating every one of his VPs, 2 out of 3 of whom are male

The results of this week's vote are expected to be announced at noon today in the SLC MPR, and will also be posted to Twitter when they are released.

InsideR  
Twitter: @mN\_InsideR

**profQUOTES**

Lossless rotation... lossless rotation is asking the person to rotate the screen.

Orchard CS 473

My brain is taking some time to get going today. [pause] I guess that's what Facebook does.

Orchard CS 473

Put up your hand if you've heard of the Shah function.

Now put up your hand if you haven't.

Hmm, looks like you've either heard of it or haven't heard of it. so much for my theory of quantum education.

Orchard CS 473

(Talking about the original film) The film is called 'Star Wars' and if you challenge me on that you will fail the course.

Wood MUSIC 246

The assembly cut of the movie Titanic was 13 hours long. Though, for some of you the movie feels like it's that long anyway. Just sink the damn ship already...

Wood MUSIC 246

(Talking about a compiler optimization) because compiler writers are gods. Don't tell any compiler writer I said that. Especially not Lhotak.

Brecht CS 350

I picked up a copy of mathNEWS this morning and I was disappointed. I've said lots of quotable things to you and I'm not in profQuotes! That's 10% off everyone's final grade.

O'Donovan PHYS 122

It's basically banging you on the hood of your plane. Damn it! If I see that in mathNEWS.

O'Donovan PHYS 122

If the chalk falls, and I catch it, then you guys have to give me a round of applause. Don't worry, it doesn't happen that often. If I don't, though, you guys have to pretend that NOTHING EVER HAPPENED!

Eden MATH 136

Okay, so, A transposed, transposed. Holy crap, this looks like a final exam question for a third-year Laurier student!

Eden MATH 136

\*clink of a bottle falling\* ... That's a beer bottle, isn't it?... \*pause\* At least bring it up to the prof, damnit!

Eden MATH 136

Student: \*text text text\*

Prof: If you don't stop texting, I am going to make everyone in the class stare at you and make funny noises.

Student: \*silence\*

Class: \*chuckling\*

Franklin MATH 135

Like all good things, Jazz used to have a sexual connotation.

Weaver MUSIC 240

We are a music class, not a math class. We will not be using those little symbols. We will be using letters.

Shantz MUSIC 270

Things are rough out West, not as refined as we are in Ontario.

Weaver MUSIC 240

Electric guitars are great, they can sustain as pitch for a long time. As long as we are burning coal, running nuclear plants and killing the environment, we can sustain the sound of an electric guitar.

Weaver MUSIC 240

What's the word... Sorry, I can't speak English.

Weaver MUSIC 240

You don't need to go to Juilliard for 8 years to play the clavier...

Brownell MUSIC 100

Brass instruments... well... they're kinda rude.

Brownell MUSIC 100

We should have a place where all the profs can write stupid student quotes.

Brecht CS 350

Physicists have their own ideas of how linear algebra should work, but it's not related to math.

Godsil CO 634

Kronecker's product is god's gift to students (the obvious thing works).

Godsil CO 634

Let's call this problem  $\pi^*$ , the star because this is our special special problem.

Cheriyen CO 754

So, if you've seen this before, good. And if you haven't, I suggest you prove it, today!

Cheriyen CO 754

...and honestly, the complete NP-completeness course would take about two weeks, but we're going to do it in 15 to 20 minutes.

Cheriyen CO 754

Ok, so how on earth did Cook prove this theorem, and why in the world was he even thinking about these kinds of things?

Cheriyen CO 754

You have to make sure you don't have an infinite forking, where a child calls fork, and its child calls fork, and soon you have over-population and you run out of PIDs!

Brecht CS 350

[about fork] People have children for all sorts of reasons. In the old days, they would have lots of children to work on the farm. If you have a lot of work that needs to be done, you might want to have a lot of children!

Brecht CS 350

**profQUOTES**

[about execv]

Student: But, if you turn into a different program, isn't that kind of Dangerous?

Prof: Sure, you have to know what you're doing! But I mean, we're Waterloo students, right? They wouldn't let people from MIT write this code! There's a check in the code: if (school == MIT) return errcode = sorry!

Brecht CS 350

When the Turing machine is told to go left at the beginning of the tape, it makes a crunching noise, but then it keeps going.

Watrous CS 365

Student: Are calculators allowed on the midterm?

Prof: I will just say they are not. I don't really care if you use a calculator, but they can't do any good, and I'm sure some of you have calculators with internet connection.

Watrous CS 365

Prof: I don't understand why engineers won't use 'i' for imaginary numbers.

Student: Don't they use 'i' for current?

Prof: Yah, 'i' for current, 'i' for inches...

Watrous CS 365

I like to give hard exam questions. It's amazing what people can come up with under intense pressure!

Watrous CS 365

I'll actually post the website on the website.

Evans EARTH 270

This will be my favourite chapter. I've given it a name... 6

Coons PMATH 340

Engineers are strange people, there's just no way around that.

Coons PMATH 340

An engineer would think this is prime... but it's not.

Coons PMATH 340

There's complimentary tea and coffee, but that's spelled differently, and we're not on a plane, and you have to pay for those now.

Teske-Wilson CO 350

This is a course in linear optimization. There is a course in non-linear optimization. You can guess what that's one about, yeah?

Teske-Wilson CO 350

I was stuck deriving something stupid.

Leonenko PHYS 258

You can think of it like a bunch of gymnasts crawling on top of each other.

Harris PHYS 275

S.S.A.; that's like 'ass' backwards. Just make sure your understanding of it is not ass-backwards.

Bissonnette CHEM 123

**profQUOTES (Rated R)***Now with BJ Rye...**Courtesy of 42*

There's nothing wrong with masturbation, it's the safest sex you can have. As long as you wash your hands.

BJ Rye SMF 204

I don't say "What a stupid question." I think it.

BJ Rye SMF 204

I can't believe you are doing a crossword in class. It better be sexual.

BJ Rye SMF 204

You never know what's gonna come out of my mouth.

BJ Rye SMF 204

A very good insult is calling someone smegma breath.

BJ Rye SMF 204

The men are giggling. Don't tell them our secrets!

BJ Rye SMF 204

I'm just saying everyday words, you're the ones sexualizing them ... and I like it.

BJ Rye SMF 204

Well, orgasm is pretty easy.

BJ Rye SMF 204

This is why you never see atheists dating priests.

BJ Rye SMF 204

I still haven't met that person who hates orgasms. [Concerning a 99% statistic]

BJ Rye SMF 204

This scarf [leopard print] would be great as sexy underwear. Now you know what I like.

BJ Rye SMF 204

A nymphomaniac is someone who wants sex more than I do.

BJ Rye SMF 204

So 99% of the men and 98% of the women masturbate. We call the remaining 1% and 2% liars.

BJ Rye SMF 204

I used to be quoted in that Math-publication. A lot.

BJ Rye SMF 204

***Has your prof said something quotable? Type it up and send it to [mathnews@student.math.uwaterloo.ca](mailto:mathnews@student.math.uwaterloo.ca), or write it down and drop it in the BLACK BOX (located on the MC 3<sup>rd</sup> floor, between the Comfy and the C&D).***

## Chris Neal: A Comparison

*Because after a week of elections, his ego should be run dry*

So you've seen Chris Neal running across campus? You're lying, his speed is too fast for you to see him. Well, you may have seen who is in control of Feds right now. To give you an idea of how much work he has done, I present you with a comparison of Chris Neal with historical figures.

- **Genghis Khan:** Killed thousands and unified Eurasia.  
**Chris Neal:** Unified mathNEWS support of Feds, banished three students to Laurier (A fate worse than death), and imprisoned 4 more (Way to steal the *mathNEWS* front cover from last summer, but nobody's perfect).
- **Isaac Newton:** Developed calculus and Newtonian physics.  
**Chris Neal:** Learned calculus, and used it for something more important than apples.
- **Guy Fawkes:** Encouraged democracy and took blame for it.  
**Chris Neal:** As Chief Electoral Officer, made this years election interesting, and takes regular flack from the Imprint for doing something they can't accomplish.
- **Barack Obama:** Caught a falling economy with the power of the US government.  
**Chris Neal:** Caught a failing Bomber budget with a pink tie, a calculator, and sheer determination.
- **Julius Caesar:** Took ultimate power, and split it into three different positions (The First Triumvirate).  
**Chris Neal:** Took control of the three most important positions on campus at once: VPAF, Chief Electoral Officer, and President.

So there you have it. Chris Neal is a combination of Ghenghis Khan, Isaac Newton, Guy Fawkes, Barack Obama, and Julius Caesar, or as I like to refer to it, Ghengaac Fawkosar. The next time you see Chris Neal, you have few options. I would suggest thanking him for being so awesome.

Tbor

## WhenElse

*7 Years From Now in mathNEWS*

The only thing that makes this article seem really strange is that after all the changes that have happened in the time between when this article will be printed and now, this somehow still seems nearly incomprehensible and utterly irrelevant.

Now it is time to look at Volume 193, Issue 3, which will originally be published on the  $(2n + 1)^{\text{th}}$  of Centember, 2017.

## A 3D Topological Safety Analysis of UW.

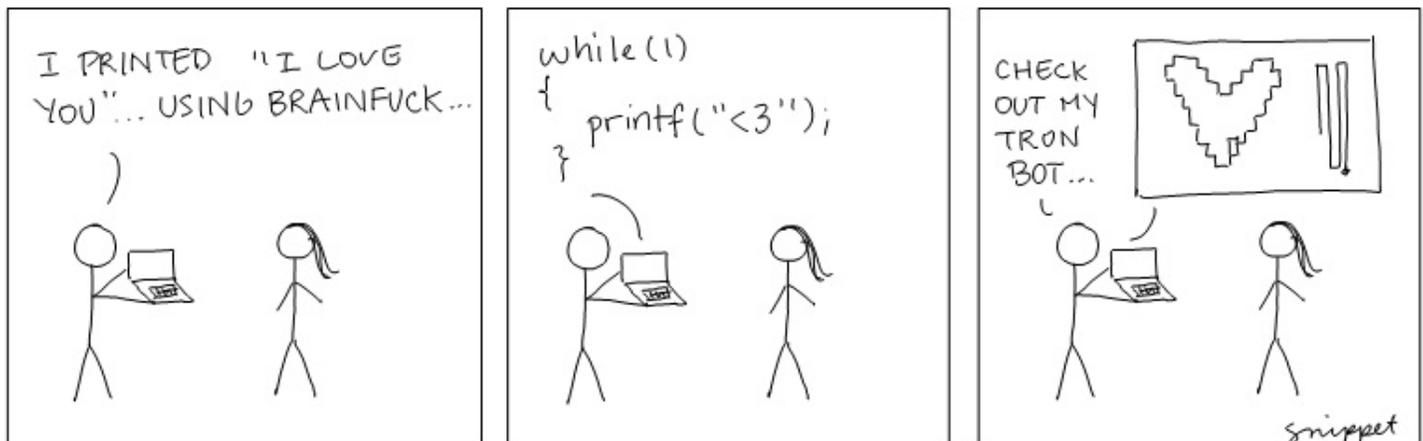
Last week, as you likely have heard, marked both the public announcement and the opening ceremony of the new Math building, the DC4. The building, which is to the DC what the MC3 was to the MC before both were reduced to smoldering mounds of rubble, came as a shock to many students and alumni, as it was built in utmost secrecy and only revealed hours before its opening. *mathNEWS*, however, is here to give you the inside scoop on the new building. The DC4 is theorised to be located somewhere in the southern Pacific Ocean, although the only entrance is a conveniently placed portal where the MC itself once stood.

The new building of course raises several questions, but most important among them, of course, is the question of what the existence of a portal means for Topology. For years, topologists have assumed that space is homeomorphic to either  $\mathbb{R}^n$  or  $\mathbb{C}^n$ , and many papers were written discussing which of these two cases was more likely to be true. Such a portal, however, disproves both theories simultaneously. "This really was a shocking discovery", commented Dr. O. Penset, from the University of Luna, who holds a PhD in Topology and an honorary degree in Theological Engineering. "With the existence of portals, it now seems like space is far more likely to be modelled by  $\mathbb{Z}^n$ , or perhaps even an infinitely dimensional Banach space over the field with four elements."

This portal raises further distressing issues; for example, if a second portal were discovered or constructed, even these new suggested topological descriptions of the universe may be wrong. The proof of such is left as an exercise to the reader.

—image

## VALENTINE'S DAY FOR NERDS



# Acceptable Reasons for Missing a Midterm

Well, it's that time of the term again. Namely, exam time, which stretches from the third week of class to the end of the semester. So, for the convenience of *mathNEWS* readers, I have taken it upon myself to compile a list of acceptable reasons for missing a midterm.

1. Religious Holidays - Switching religions for strategic use of holidays is probably not a good idea
2. Medically Documented Illness
3. Extreme Weather Conditions, if examinations have been cancelled
4. Writing for *mathNEWS*
5. Epic LAN Party
6. Attending a different exam in costume
7. Death
8. Catastrophic Meteorite Impact
9. Undeath
10. Zombie Apocalypse
11. Being sucked into an Alternate Universe to save their kingdom
12. Unification with Sephiroth
13. Release of StarCraft II

These have been ordered in increasing degree of veracity, and decreasing likelihood.

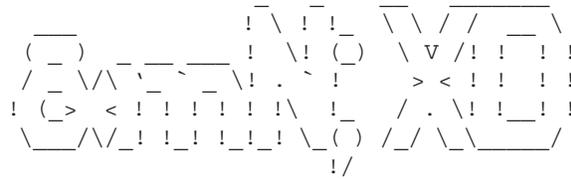
Note: Writer is not responsible for any consequences which may or likely will result from taking these seriously

—!theNewGuy—

# Where Are the Frosh (*mathNEWS* Writers)?

*MATH 135 midterm steals writers from &mathN; production night*

So apparently, the giant archaic magical systems and processes in charge of scheduling midterms for the frosh *mathNEWS* writers has decided to place a MATH 135 midterm tonight. Since so many frosh writers are not here tonight, here is some ASCII art to take up some space.



Rumor is the softie frosh also have a midterm for SE 141 on **2010-02-22 19:00-21:00** which means that they'll also be missing the next scheduled production night. Now is the *perfect* time to get your four-page article about the uses of Scheme published in *mathNEWS*!

cbhllhbc

# There Goes the Universe

"What are they doing now?" asked the first creature.

The two creatures stood at the apparatus, a panoramic display of EM-radiation of immense complexity. There were layers and layers to the view with everything from visible spectrum images to n-dimensional abstract symbols in gamma rays and radio waves, and everything in between. The apparatus hummed, below and above the nominal thresholds.

"Nothing relevant. They don't know enough," responded the second.

"Yet. They don't know enough yet. We got here, why won't they?"

The second creature kept its focus on the apparatus but sneered dismissively. A great while passed where nothing happened.

"Wait, they have counting now," the first remarked as the pattern changed.

"They're doing it wrong, they won't get much further that way."

"I suppose. What if it's not?"

The pattern danced again. A vector on the inner edge of a minor sublayer blinked and twisted. "Oh dear, they've recursed."

"What? The models said we had more time."

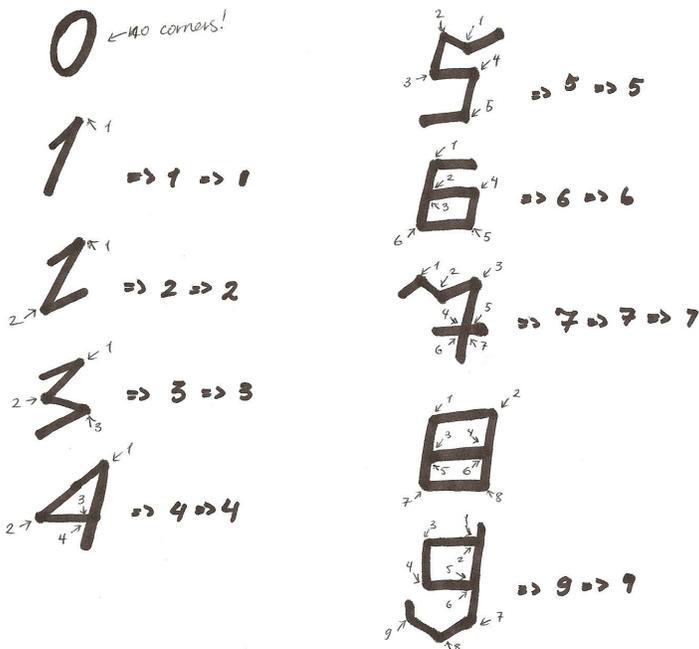
"Well, the models were wrong. They're breaking loose." The patterns in the viewer were in turmoil. The waves were synching and circling, and the vortex that started with the subtle twist engulfed the nearby patterns.

The second one sighed and put on its cranial garment. "I guess we'd better get ready then. I hate this part."

Suddenly a metallic sphere appeared in a flourish of reality, shattering the visuals of the viewer. The door opened and the story ended.

AND NOW FOR SOMETHING EDUCATIONAL...

## THE ORIGIN OF NUMBERS



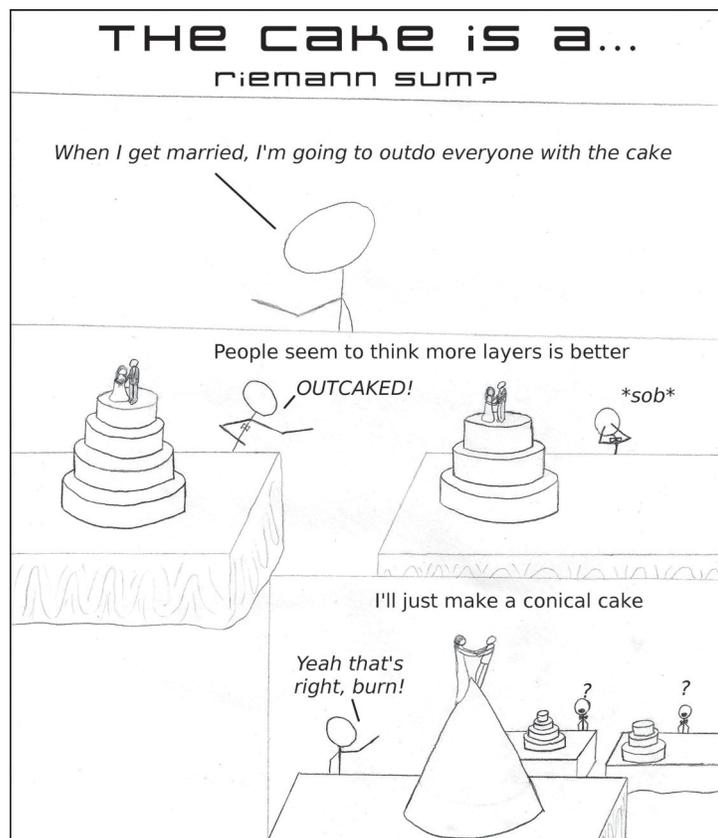
M<sub>10</sub>

## Interesting Things to do During/With/To Midterms

Midterm season is upon us, striking down *mathNEWS* writers at inopportune moments, and taking up valuable time that could be otherwise spent watching MythBusters or playing video games. Therefore, I recommend the following protest actions, not because it'll do anything, but because I'd personally find it funny.

- Dress as your favorite hero, be it a comic book hero, movie hero, or otherwise. If you're in a CS midterm, dress as Neo.
- Fake a nervous breakdown, scream loudly, then go back to writing the midterm and pretend not to remember if anyone asks you about it.
- Write the midterm using serifs in your handwriting, then complain when they won't give you extra time.
- Write any and all mathematical expressions in LaTeX.
- Reference *mathNEWS* in your proofs, even if the article has nothing to do with the proof. Bonus points for referencing filler.
- The multiple choice cards in midterms are marked as do not fold. Make origami with the question sheet instead.
- Draft a love letter to your significant other on the back of the midterm.
- Skip the midterm and come write for *mathNEWS*.

!case



## How to spot a vampire

*when centipedes aren't an issue*

In this day and age of technological prowess, security is a major concern. For example, on the internet, you may believe you are conversing with a lovely woman. Zodiac sign: Aquarius. Favourite colour: Pink. Enjoys: long walks on the beach. Breast size: ... You make a pun; she sends you a winky emote. You're hooked. Before long, you've agreed to meet in a very dark club at the end of a very dark alley. **STOP!** But you don't. You meet her. Or rather, you meet him.

Of course, everyone knows there are no women on the internet; not in games, not in chat rooms, not anywhere. As was so aptly put by FASS, "MMORPG really stands for Mostly Men Online Role Playing as Girls." This is known. Where the identity confusion gets dicey is in person. This may seem to be a safer, but in fact, there is far less certainty. In particular, you see someone on the street who you whole-heartedly believe to be a vampire. But wait; they might not be. Here are some key ways to spot a real vampire from a poser.

1. They sparkle. Twilight wasn't completely off on that one. Vampires do sparkle... much like magnesium does when set on fire.
2. They don't eat garlic. However, that's probably due to the fact that they don't eat food. You don't eat sliver, perhaps you're a werewolf. Fallen hopelessly in love with a baby lately? (no, this is not a pedo joke, it's called imprinting... or is it?)
3. They are unable enter your house without an invitation. And why would they? They live in castles. Why would they want to visit your crappy studio apartment?

Three! Three ways to spot a vampire! Ah! Ah! Ah! Wait! Four! Four ways to spot a vampire! I forgot one. Let me restart...

So now you know, go out to the world and be merry! If this was over your head, don't worry. You can blame it on pop culture failures, I won't tell anyone. I promise.

weeding out the fakers,  
prime8

## NetHack

*Now with more Twilight*

You begin bashing monsters with your bare hands.

--More--

You miss Edward Cullen. Edward Cullen begins to sparkle. --More--

You are blinded by a flash of light! It hits! It hits!

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Bella the Sightseer St:12 Dx:10 Co:18 In:4 Wi:5 Ch:7  
Dlv:38 \$:15 HP:45 (53) Pw:2 (2) AC:10 Exp:12 Blind

## Why You Should Care About Scheme

### Part One: Introduction

This four-part article series came about as a result of a series of conversations with Software Engineering students, particularly those currently in the 2A class. It was my observation that they were exposed to quite a lot of C and C++ in their first year, and a lot of them had developed an unfortunate dislike for Scheme. This dislike seems to mostly stem from a general perception that learning Scheme has no practical value. I would like to take some time to talk about the practical value of understanding functional programming, and why it should be considered a vital part of any student's education. I think it's clear that learning a pure functional language like Scheme is an excellent way to learn functional programming, because it forces the user to solve problems within that paradigm. A multi-paradigm programming language might make sense from an industrial perspective, but the tendency to cling to the crutches of your preferred paradigm makes it pedagogically unsuitable. Scheme forces the student to think about problems in a new way, which is very beneficial.

If there's one thing that engineering types such as myself are known for, it's an almost pathological obsession with pragmatism. So, when it comes to programming, we're usually not in the first wave of people moving to new technology ideas. There is no single place where this is more true than in our reaction to the now over 50-year-old functional programming paradigm. You see, there is nothing that annoys an engineer more than profound and awe-inspiring elegance in his or her tools. Never mind that John McCarthy was using just seven primitive functions (quote, atom, eq, cons, car, cdr, and cond) in 1960 to define a language that was breathtakingly more expressive than many 'modern' engineering programming languages today. We hate being breath-taken. It's downright uncomfortable. If civil engineers spent all of their time being moved to tears by the purity and elegance of their cranes or backhoes or whatever it is they use, they'd probably never get any work done. In an article last term, I tried to describe the "lambda" concept in an accessible way for new programmers. In doing so, however, I might not have done a very good job of answering a more fundamental question: Why, exactly should I, a Software Developer Extraordinaire, care about this? Isn't it just more "syntactic sugar"? Nice to have, but not too big of a deal to go without? Well, to address this mistaken impression, I'm going to use this series to try and make the point that functional programming matters - and I'm going to make every effort to support this claim on pragmatic grounds, with no references to aesthetics at all.

To Be Continued...

Thor

## You know you've used too much Linux when...

### Insert meta-joke mentioning the insertion of stereotypical joke

So, when sitting there at 3 am in my underwear configuring a xorg.conf file the other day, I realized that it has been roughly one year since I turned my back on the world of normal people and started using Linux exclusively. In that time, I've become that annoying guy who evangelizes Linux so often you want to stab your eardrums. (I'm not quite sure how, apparently I'm just obnoxious and evangelize things a lot...)

Anyway, using my vast experience as "That guy who never shuts up about Linux," I figured I'm as qualified as anyone else to declare what defines someone who has used Linux too long. Consider joining Linux Users Anonymous if several of the below apply:

- You can name more shells than family members.
- You've spent more time compiling your kernel than you have in the company of women (this one only applies if you're male. If you're female, I'm single and have been favourably rated by 3 out of 5 drunken blind lunatics).
- When someone says "cat" you do not think of the furry four legged creature.
- Your mouse sits dusty and unloved on a corner of your desk.
- You emanate an uncontrollable hissing noise when forced to use Microsoft Products.
- Your spirit animal is a penguin.
- You have multiple shrines to Linus and RMS amongst your servers.
- Your sense of humour has slowly eroded to the point you can only make Linux jokes.

.. and I think I've run out of ideas. Oh well, this should be enough to earn some pizza. See you next time!

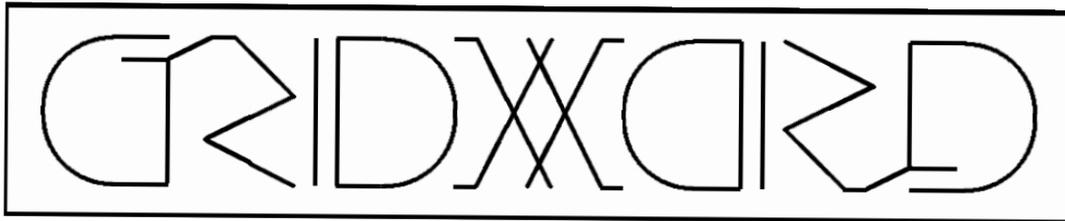
Sector Corrupt

## One Night Stands

Why the hell is it called a "One Night Stand"? I've done them before and I sure as hell wasn't standing during any of them...

# Don't Forget: Sunday is Valentines Day.

*You don't get a second chance*



## gridCOMMENTS

For the second *gridWORD* of the term we had only one submission, the same amount as we had for the first. The winner for issue 2 is Everett Bokma whose answer to the *gridQUESTION*, “What do you expect to be your undoing?” was, “My undoing will be the combination of SE 350 (OS), SE 382 (Human-Computer Interaction) and the release of Pokemon Soul Silver/Heart Gold.” Go to the MathSoc office to collect your marvellous prize.

I demand more submissions for this issue’s grid, so make sure to submit to the **BLACK BOX**. Remember to include your name and answer the *gridQUESTION*: “Why weren’t you at *mathNEWS* production night?”

perki

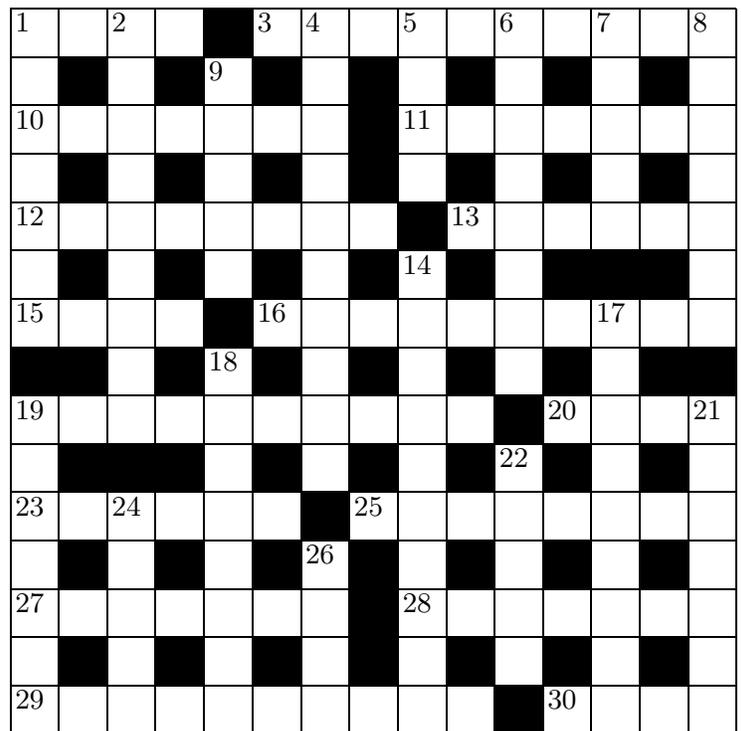
## Grid Clues

### Across

1. Common church feature
3. Inviolable
10. Moil
11. Lit up
12. Undermine
13. Artist’s workroom
15. Minimum tidal range
16. Malicious
19. Administration of justice
20. Woodwind instrument
23. Unpigmented individual
25. Ceremonially poured liquid
27. Ancient wind instrument
28. Avoiding pleasure
29. Tailed amphibian
30. Optical device

### Down

1. Skilled worker
2. Right, nautically
4. Between andante and allegro
5. Horse tack component
6. Midwinter or midsummer
7. Wanderer
8. Dull
9. Squander
14. Unreasonable
17. Dungeon accessed by trapdoor
18. Element 21
19. Envious
21. Castrated men
22. Travesty
24. Rumpus
26. Knitting thread



## Solutions: Issue 2

