math*overflow*

David Zureick-Brown
Emory Univeristy

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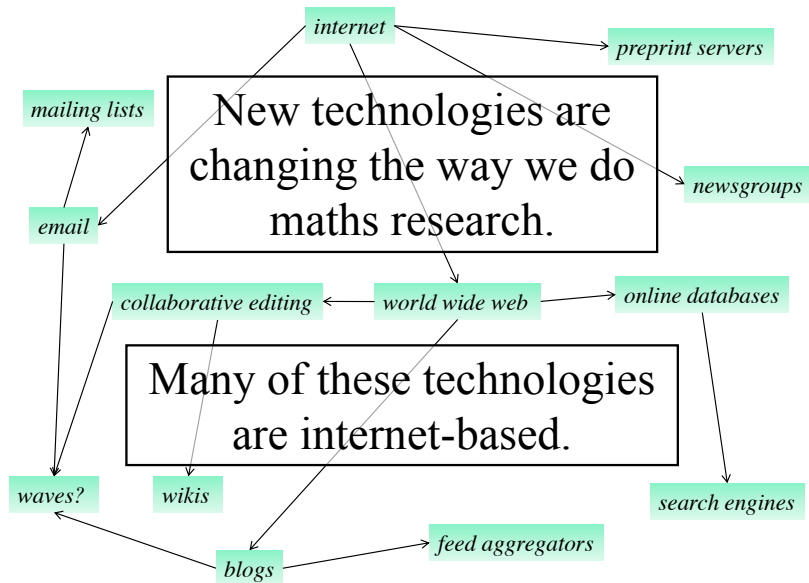
internet

preprint servers

mailing lists

New technologies are changing the way we do maths research.

newsgroups

email

collaborative editing

world wide web

online databases

Many of these technologies are internet-based.

waves?

wikis

search engines

blogs

feed aggregators

Maple 1980   L^AT_EX 1983

MATLAB   *Mathematica* 1988

1947   **Email** 1969   1984   **MAGMA** 1993   http://ww 1989

AT&T *Integer Sequences* RESEARCH 1995   **sage** 2005

sci.math   1987
sci.math.research   1991

Blogger 1999

arXiv.org 1991

MOVABLE TYPE 4 Publishing Platform 2001

WORDPRESS 2003

Wolfram **MathWorld** 1999

WIKIPEDIA The Free Encyclopedia 2001

Google Book Search BETA 2004

J STOR 1995

PlanetMath.Org 2000

Google Scholar BETA 2004

Tricki 2009

polymath 2009

AMERICAN MATHEMATICAL SOCIETY **MathSciNet** 1995

Mathematical collective consciousness

"I assume everybody has dreams about organizing and sharing everything they ever think of, or of how great it would be if everybody in your field shared a big brain like the borg"

– Anton Geraschenko

11. One can start with any point (since every point of S should be pivot infinitely often), the direction of line that one starts with however matters!

👍 8 👎 0 ℹ️ Rate This

Comment by Anonymous — July 19, 2011 @ 8:19 pm | Reply

In other words, we can start with any point and 'just' need to choose a second point through which will we draw a line.

👍 0 👎 0 ℹ️ Rate This

Comment by Nemanja — July 19, 2011 @ 8:28 pm | Reply

Perhaps even the line does not matter! Is it possible to prove that any point and any line will do?

👍 0 👎 1 ℹ️ Rate This

Comment by Anonymous — July 19, 2011 @ 8:31 pm | Reply

No, if you start with two points on the convex hull (ordered in the right way) you stay on the convex hull.
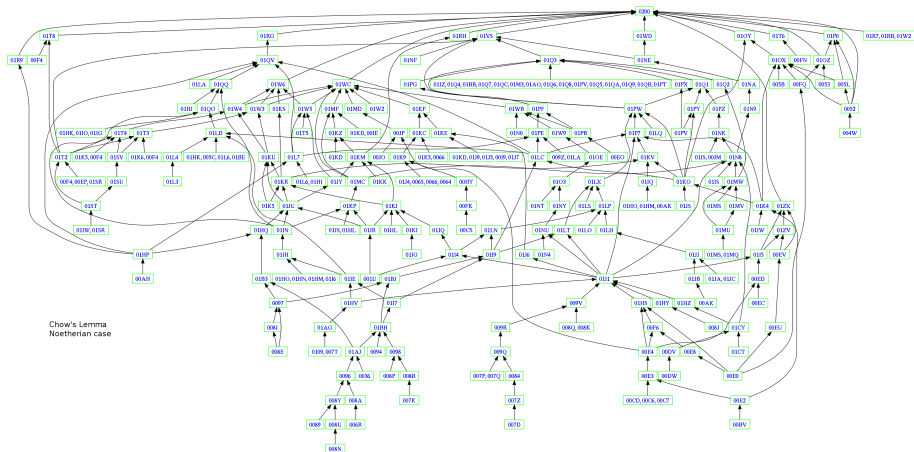
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Comment by Thomas H — July 19, 2011 @ 8:35 pm | Reply

It is not possible, two consecutive points on convex hull will not do.

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Stacks Project

Chow's Lemma
Noetherian case

Motivation: math on the internet was getting buried!

What's new

Updates on my research and expository papers, discussion of open problems, and other maths-related topics. By Terence Tao

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ARTICLES BY OTHERS

Learn and relearn your field

> Even fairly good students, when they have obtained the solution of the problem and written down neatly the argument, shut their books and look for something else. Doing so, they miss an important and instructive phase of the work. ... A good teacher should understand and impress on his students the view that no problem whatever is completely exhausted. One of the first and foremost duties of the teacher is not to give his students the impression that mathematical problems have little connection with each other, and no connection at all with anything else. We have a natural opportunity to investigate the connections of a problem when looking back at its solution. (George Pólya, "How to Solve It")

Learning never really stops in this business, even in your chosen specialty; for instance I am still learning surprising things about basic harmonic analysis, more than ten years after writing my thesis in the topic.

Just because you know a statement and proof of Fundamental Lemma X, you shouldn't take that lemma for granted; instead, you should dig deeper until you really understand what the lemma is all about:

- Can you find alternate proofs?
- If you know two proofs of the lemma, do you know to what extent the proofs are equivalent? Do they generalise in different ways? What themes do the proofs have in common? What are the other relative strengths and weaknesses of the two proofs?
- Do you know why each of the hypotheses are necessary?
- What kind of generalizations are known/conjectured/heuristic?
- Are there weaker and simpler versions which can suffice for some applications?
- What are some model examples demonstrating that lemma in action?
- When is it a good idea to use the lemma, and when isn't it?
- What kind of problems can it solve, and what kind of problems are beyond its ability to assist with?
- Are there analogues of that lemma in other areas of mathematics?

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Factcheck.org
FiveThirtyEight
Gapminder
Literally Unbelievable
Planarity
PolitiFact
Quite Interesting
snopes
Strange maps
Television tropes and idioms
The Daily Show with Jon Stewart
The Economist
The Onion
The Straight Dope
This American Life on the financial crisis I
This American Life on the financial crisis II
What if? (xkcd)
White whine
xkcd

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A Portion of the Book
Absolutely useless
AMS Graduate Student Blog
Analysis & PDE Conferences
Annoying Precision
Area 777
Ars Mathematica
Automorphic forum
Avzel's journal
Blog On Mathematical Journals
Bubbles Bad; Ripples Good
Cédric Villani
Climbing Mount Bourbaki
Colloquio Oleis
Combinatorics and more
Compressed sensing resources
Computational Complexity
Concrete nonsense
Delta epsilons

33 comments

Comments feed for this article

7 March, 2008 at 10:06 am
[...] Learn and relearn the field: learning the strength and weakness of tools, learning what else is going on in mathematics; learning how to solve problems rigorously.
[...]
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14 June, 2008 at 11:32 am
Just For Fun
这等级个人博客wordpress上了!Blog | ...
[...] NO. In order to make good and useful contributions to mathematics, one does need to work hard, learn one's field well, learn other fields and tools, ask questions, talk to other mathematicians, and think about the [...]
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6 September, 2008 at 9:04 pm
Anonymous
Dear Prof. Tau,

First of all, I should thank you for your nice and useful hints and advices. Then, I would like to tell you a serious problem I'm facing with and ask you to help, if you don't mind:
I'm a PhD student and my field is arithmetic algebraic geometry. As you know, the literature in this area is vast. So if I want to learn my field and go through all the details of all results and proofs, then I guess, I can never (i.e., in a reasonable time) work on my own thesis problem and produce anything. But, not learning and reading that way give me the feeling that I'm missing something and I'm not confident anymore.

I would really appreciate if you could give me some advice. Thank you in advance

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7 September, 2008 at 8:48 pm
Matthew Emerton
Dear Anonymous,

I hope you won't mind someone else providing you with some advice.

Most workers in arithmetic algebraic geometry (and not just students) suffer from the problem you describe to various degrees. The literature is indeed vast, and to read everything as a student, even everything that you might need in solving your particular thesis problem, is essentially impossible.

I would suggest the following: a good grounding in algebraic geometry is essential. Most students in algebraic geometry, of all flavours, go through the rite of passage known as "Hartshorne": reading Hartshorne's book, especially chapters 2 and 3, and solving vast numbers of exercises. It is more or less impossible, and in any case probably unwise, to avoid doing this. And once you have solved many/most of the Hartshorne problems, you should have some baseline confidence in algebraic geometry, scheme theory, and cohomology.

At the same time, there are other texts that it is good to look at because they emphasize certain functorial aspects of algebraic geometry more than Hartshorne, aspects which are particularly important in arithmetic algebraic geometry — e.g. Mumford's red book. It is advisable to supplement your familiarity with such books.

Another standard text to read is Cornell-Silverman (and these days, depending on your precise direction of interest, Cornell-Silverman-Stevens — but this is more number-theoretic, while Cornell-Silverman is more geometric). This is not such a long book, and has a lot of information in it. Furthermore, since it is

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sheaf-cohomology ✕ | galois-theory ✕
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diophantine-equations ✕ | stacks ✕
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✕ p-adic-analysis ✕

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Ignored Tags

- Created in October, 2009 (2 Berkeley grad students, 1 postdoc)

- Draws questions and advice from each extreme – Fields medalists and gifted high school students

- (Sanitized) database dumps are publicly available, fun to grep for statistics of site usage

Fun facts

- **35000** questions, **60000** answers, at least **10000** 'active' users;

- Time before getting an answer:
  - Average: 4.40 hours
  - Median: 1.75,
  - Standard deviation: 5.70

- Time before getting an 'accepted' answer:
  - Average: 5.39 hours
  - Median : 2.61
  - Standard Deviation: 6.16

MO in action

math*overflow*   [Questions] Tags Users Badges Unanswered   **Ask Question**

How many mathematicians are there?

▲
26
▼

☆
11

Although we are not so numerous as other respected professionals, like for example lawyers, I wonder if we could come up with a reasonable estimate of our population.

Needless to say, the question more or less amounts to the definition of"mathematician".

Since I should like to count only research mathematicians (and not, say, high-school teachers) some criterion of publishing should be applied. But it should not be too strict in order not to exclude Grothendieck, for example, who has not published any mathematics for a long time.

An excuse for asking a question so soft as to verge on the flabby is that it might be considered an exercise in Fermi-type order of magnitude estimation.

soft-question

mod | edit | close | delete | flag | cite   asked **Nov 14 2009 at 8:27**   community wiki
▦ Georges Elencwajg

24	Time to break out the Drake equation. – Ryan Budney Nov 14 2009 at 8:35
7	On a related topic: does there exist two mathematicians with the same number of hairs on their heads? – Douglas S. Stones Mar 4 2010 at 4:53
22	Doug, the answer is yes. I know several completely bald mathematicians. – Ryan Budney Aug 18 at 19:24
4	wow between 2009 and now MO has changed (matured) a lot!! – Suvrit Aug 18 at 19:33

tagged

soft-question × 888

asked
3 years ago

viewed
5,220 times

latest activity
1 month ago

Tip: You can see the source for MathJax output by right clicking it and selecting "View Source". **See more tips and tricks.**

MathJax trouble? (Re)process math with jsMath.

Related

Cures for mathematician's block (as in writer's block)

(Preferably rare) Audio/Video recordings of famous

MO in action

5 ▲ ▼ ✓

Current count of Mathematics Genealogy Project is 137672 (I am assuming that the PhD students that graduated are ranked as "research mathematicians"). But the problem is.. Mathematics Genealogy is mostly for universities of developed countries. There could be some really good university in Russia, China or Korea out there that doesn't give us the correct statistics. Another problem is.. Mathematics Genealogy Project counts even the dead mathematicians (like Hilbert, Hasse, Kepler and so on).. and I am assuming you want a report of living mathematicians.. but hey, I'm quite surprised by the number even 200k is pretty low for the living!

mod | link | edit | delete | flag | cite

answered **Nov 14 2009 at 8:45**   community wiki

Jose Capco

2   The MGP used to be utterly inadequate for those who got their PhDs in the UK before the 1980s, it may have improved now. Also, there are odd gaps/bugs in some of the entries. It's useful and interesting but I'd be wary of using it for head counts. – Yemon Choi Nov 14 2009 at 9:01

3   The dead mathematicians are probably neglegable, because of the exponential growth of the mathematics community. – Martin Mar 8 2011 at 8:03

5   I'd be careful using the MGP. I'll give some examples from my family, so I am very sure of the facts - one of my grandfathers, who was a chemist, and never published a math paper in his life, is listed in the MGP twice, as distinct persons - once as a student (his also listed advisor was not a mathematician either) and once as an advisor. My father, who is a physicist, and wrote exactly one paper that could be called math, is listed. So are 13 of his students - probably at most 1 or 2 is reasonably considered a mathematician, even if one regards many theoretical physicists as mathematicians. – Dan Fox Jul 16 2011 at 9:48

add comment

How to write math

You can just type LaTeX formulas between dollar signs! There are some occasional strange behaviors: see the FAQ and this meta.MO thread for details. **Basic solution:** if you're having problems with the preview (or the post looks wrong), put backticks around any math that contains underscores or asterisks. E.g. write `$f_n=g_{n+1}$`.

▲ In an article written a few years ago, Jean-Pierre Bourguignon estimates that there are around 80

- **Badges** - mostly exist to reward exploring the site and figuring out how to do everything;
- **Reputation** - gain more ability to use site;
- Big boon – the community is **self moderating**;
- **Wiki effect** – edit others' answers;

Things you get to do with **a little** reputation:

- **Up-voting**

- **Down-voting**

- Ability to **leave comments**

Things you get to do with a **lot of** reputation

- **"Moderator"** privileges

   (e.g., **"vote to close"** a bad question)

- **retag** questions

- **edit posts**

- **edit answers**

Easy to **cut through the clutter**:

- **Tags**
- **Watched**
- **Avoided**
- **RSS** (for questions, users, tags, etc.)

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About the site - quote from Anton

"One thing that I like to point out in conversation about MO is that putting a question or answer out there without posing it towards some specific person often leads to meaningful interactions with awesome people. Some people start collaborations based on MO questions, but even if you don't, you get to know a lot of people pretty well, which feels great. Also, there is something about interacting with famous people on MO that humanizes my internal representation of them."

– Anton Geraschenko

- Specific mathematical questions
  - Research oriented
  - Idle (e.g., "Is this theorem still true if I weaken hypothesis X'?")
- Historical questions
- Reference requests
- "What's the point of...?"
- Career advice
- Crowdsourcing typos
- Gossip (discouraged)

"I started reading mathoverflow a few months ago, and currently for me it is by far the best online way to find out about current events in math research (at least in my area – number theory). It's just stunning the number of new results and links to key papers I've found on mathoverflow."

– William Stein (Mathematician, creator of SAGE)

Why successful for pure mathematics?

"Using MathOverflow should be an extension of the way you normally do mathematics, and the same rules you use to effectively solve problems can be used to make good MO questions. Just like solving problems, crafting good questions requires you to put in some effort!"

– "'How to ask" page

Thank you!

For more:

1. See whats-the-story-behind-mathoverflow
2. Atlantic article – "Beyond Facebook: How the World's Mathematicians Organize Online"
3. Terry Tao's talk mathematical research and the internet