Fashion and Concrete: The Pink
Tie of yesterday (above) and
today (below).

## Bieberbach is bach

As you may or may not recall, last week's issue asked if anyone could tell us something more about the Bieberbach conjecture. We thank Ken Shirriff for supplying us with a copy of an article from Science News (Sept. 15, 1984: Vol 126 No. 11) which tells a little about the conjecture and its proof. The following is a short summary of that article.

The Bieberbach conjecture had challenged mathematicians for seventy years until recently when Louis de Branges of Purdue University in West Lafayette Ind. proved that it was true. The conjecture is a statement about the coefficients of power series that represent analytic functions with certain properties. Analytic functions play an important role in calculus and the solving of differential equations. One set of these functions is in the form of a power series on the complex points in the unit circle:

$$f(z) = a_1 z + a_2 z^2 + a_3 z^3 + \cdots$$

for $z \in C$

The German mathematician Ludwig Bieberbach, after studying particular examples, guessed that for all functions of this type, the nth coefficient must be between n and -n. Until de Branges' work, the conjecture was known to be true only up to the sixth coeffiecient.

(We would also like to thank Deb Bouck for presenting us with the almost identical BeaverBack conjecture.)

## Time Capsule Issue

Yes that's right, next week's issue is our official time capsule issue. You are invited to submit twenty or thirty words (include your name or an alias) to be printed among the thousands of other that will be in next week's mathNEWS. Possible ideas are comments on university life, insults, warnings, inside jokes, philosophical statements etc. Here's an example:

*No I don't live on the corner of Euclid and Descartes; Bob*

Almost anything will be printed uneditted. Start right now (this class isn't very interesting anyhow) and you'll be done in a minute. Drop it of in our black box outside the third floor smoking lounge.

Do it now, don't delay, deadline is 4:30 Monday! Go go go !!!! Complete details in next week's issue.

*This space not intentionally left blank.*

## More Traps

If you've read the 84/85 Fed Info Book, you'll know what I mean when I talk about traps. Congratulations are in order to the author of that article for putting into print some advice students have needed for years. However, here is my own modest addition to the 'Traps' article, perhaps to be wedged in between 'Studying Too Much' and 'Wasting Time "Working" '.

### *Casual Reading*

Some people complain they never have any time to read—they don't know how lucky they are. Once they let down their resistance—say to an old copy of *Ulysses* someone just happened to have left behind—it becomes so *easy* to read a few chapters of this or that classic rather than doing a few calculus problems. After the casual reader rises dazed from a four-hour sitting and tries a few integrals, he/she may find it impossible to concentrate on math because of the plight character X, Y or Z on page 376. Inevitably the calculus is shoved aside for the cheap novel.

If you don't have this problem, maybe someone you know or love does. Try to tell them gently that they are wasting entirely too much time reading escapist literature. If stronger measures are necessary, tell them the ending of whatever tome they are currently devouring. When all else fails, knock the reader out using a Sunday New York Times, and revoke their library priveleges while unconcious.

Georg Mandrive

## Want-ad Awards

Are you in co-op? Looking for a job for next term? Had a look through the want ads? Why not nominate one for an award?

The following categories are open for nomination but if you discover a new category, an award would certainly by presented accordingly. The categories are:

Most Technical Jargon
Most Vague
Most Likely to Ruin A Career
Highest Minimum Qualifications

So go through those want ads again quickly and find a deserving job description. Submit the award category, the employer and the job number.

# Car Rally Results

The first ever Fall/84 MathSoc Car Rally wrapped on Saturday afternoon. When the dust settled Mike Morrissey and France Hughes emerged as the victors with 113 points and a finish time of three and a half hours. Second place went to Tom Haapanen and Barry Rosetti with 105 points. Denis Rowland and Liz Raest's 101 points was good for third place. Congratulations also go to Car # 3 that set a record with a finish time of almost six hours for a score of -123 points.

Our only motorcycle entrant, as as well as three cars, didn't find the way to the finish line but the sixteen that did seemed to have had a good time.

Prizes for first, second, and third places are available in MathSoc. Also, a list of the correct answers as well as the funniest answers is posted outside the office.

See you next term
Brett Martin

# Watts Line

## *Winning (almost) and getting slimed*

Well, last Saturday was the famous MathSoc Car Rally, organized by (you guessed it) MathSoc. Actually, Brett did most of the work, and set up quite a good rally. Of 24 entrants, many actually finished the rally, and one of them actually won! Despite us sliming ourselves several times, we managed to finish second, and it is of this amazing journey through the wilderness on the fringes of Kitchener-Waterloo that I will offer some highlights of (sorry about the grammar there).

"Let's see... turn $n$, where $n$ is the smaller of the number of right-hand turns and 2 times the number of left-hand turns." Sounds easy enough, doesn't it? "This has to be it! Look, the next instruction says 'follow the arrows'. " "Yeah, but that Sunoco arrow is pointing to the ground. Even *my* car isn't equipped for subterrain travel." So we wandered around until we found our way out of Sunnydale, and miraculously back onto the right route. This was only the beginning...

"We need some corn, Barry!" "Just stop at that cornfield over there (you know, the one behind that house with the farmer (avec shotgun) on the porch)." "...but we get bonus points for it being cooked... let's wait for a while". We did get the corn — cooked even: a stop at the Kwikie to pick up a can of cooked kernel corn... Another stop at the Blue Moon to complete our collection of beer bottle caps... And what about those blue sheds that might blow up?

The tough part came when the route took us to the Country Hills subdivision. Here, we got things like 3.25 kilometres - turn right; 3.50 km - right; 3.70 - left. This may sound OK, but let's factor in a couple of complications. First, my car dates back to 1972, when nobody on

# Mathsoc Notes

A MathSoc Council Meeting took place on Thursday Sept. 27th. The first item of new business was the **math-NEWS** budget, which was ratified unanimously, followed by the CSC budget, which was also ratified unanimously. MathSoc will be having the **CFNY Roadshow** on November 8th, 1984, and the event is to be held in the new **Fed Hall**. The **MathSoc Budget** for Fall 1984 was submitted and approved.

Among the events MathSoc is planning for the coming month (besides **Oktoberfest** - today!) are *a)* a roadtrip to the **Diamond Club** in Toronto on Oct. 25th, and *b)* a **Pink Day**, with events including hanging the Big One and C&D specials for people wearing pink. Tony Arnold suggested new designs be found for buttons and t-shirts, with contests for ideas. The **Orientation Financial Statement** was presented near the end of the meeting. It was agreed that Council meetings would be held every second Tuesday at 4:30, commencing Oct 9th.

this continent had even heard of such a beast as a kilometre. Even those conversion stickers don't help much when it's the odometer you want converted... Second, my car has non-standard tires. The 60-series profile tires are a bit lower than normal (and hence have a smaller circumference) so my odometer was off by another 5-10%. (Thirdly, magic numbers like 1.609 (ie. with a '.' in them) don't work on that stupid calculator I found in the glove box - Navigator.). This started getting a bit hairy... We finally made it out of that bloody maze, though, even if it was with another car on our tail. Bright red cars are not that inconspicuous! However, I managed to shake Jack&Janet off with a maniacal (sp?) left turn onto Homer Watson (I almost lost my navigator there, too... (I'm a little too substantial for the flimsy doors of that glorified red shoe box -Navigator.)).

There were other things, like a McGinnis coaster (they don't exist), the engineer hat (how are you supposed to mutilate a hardhat if your life depends on its safe return? (I didn't care, I wanted it destroyed, it wasn't my life and it was worth 10pts -Nav.)), and that stupid $4 barbershop that we were supposed to find before turning off Breithaupt St (What did that old-timer do??? -Nav.); Finally, the mad dash accross a (very) cold windy field (large paper bag in hand) to be greeted by the cry of a very large mathie standing beside a barbecue: "Hot Dogs, get your Hot Dogs here, four for $1, that's 2 thin dimes and a nickel apiece, get your Hot Dogs here". Then, there was the sad realization that: no, they didn't think my (navigator's) tacky, grey (with spots of pinkish red) tie was a true *Pink Tie*. Grrrr... and hopefully these things don't become rare in the future terms!

Tom Watts
(Barrismo -Nav.)

# Lotteries

Lotteries are defined by Webster's to be "a distribution of prizes by lot: a game of chance". Although it is a form of gambling, nearly everyone buys lottery tickets. One reason is, of course, the hope of winning a big prize.

However, the probability of winning the main prize in most lotteries is very small, usually between $1/10^{**}7$ and $1/10^{**}5$. For example, if a person bought one Provincial ticket every week, on average it will take about 38,460 years to win the grand prize of $500,000.

In fact, the expected value of a lottery ticket in terms of cash prizes is only about 1/3 the value of the ticket. Even including other prizes such as bonus draws, free tickets, etc., the expected value is at most about 50% of the value of the ticket. Thus, on average, every $1 investment in lottery tickets returns only about $.50 in prizes.

Can these poor odds be improved? For most lotteries there isn't unless the lottery draw is rigged (eg. you have control over which numbers are picked) or if the person is psychic and already knows what the results will be. This is because to win in lotteries, such as Lotto Canada, one must have a certain sequence of numbers in a certain position, or in lotteries where one chooses their own numbers such as Lotto 649, some unique numbers are picked out of a group of possible numbers. In both cases, all number combinations have an equal probability of winning.

However, in Wintario one can maximize their chances of winning by choosing the appropriate ticket. Since in Wintario some of the winning numbers are position independent (ie. they can appear anywhere on the ticket) one can maximize their chances of winning these prizes by having as many different number sequences on their ticket as possible. For example, to win 5 tickets for the next draw, one needs only to match the 2 digits drawn with any two consecutive numbers on the ticket. The ticket has 5 two consecutive digit combinations (first and second numbers, second and third, ... , fifth and sixth numbers). If any of these combinations are duplicates, then there are fewer different two consecutive digit combinations and thus less chance that one of these will match the one drawn for the prize.

Another property to be maximized is the number of different digits. The scramble prize is a $50 prize for matching all 6 digits drawn in any order. If all 6 numbers on the ticket are different (eg. 123456), then there are $6! = 720$ six digit combinations that can be drawn for the ticket holder to win. If there are 2 numbers that are the same and 3 numbers that are the same (eg. 523332), then there are $6!/1!2!3! = 60$ six digit combinations that will cause the holder to win. If all the numbers are the same (eg. 000000), then there is $6!/6! = 1$ six digit combination. Thus, there is a factor of 720 between the best and the worst numbers to have for this prize.

Therefore, the best ticket to have is one that maximizes the number of different sequences and the number of different numbers. Having 6 different numbers maximizes both of these quantities (and is the only thing that does) and thus is the one that stands the best chance of winning, although it is still not very likely.

Although the probability of winning in lotteries where one chooses their own numbers (like Lottario) is irrespective of the numbers chosen, there is another factor to consider. Usually, for the main prize (and maybe some subsidiary prizes) there is a certain amount of money to be split among those who have the winning number. The fewer people having the winning number means more money for those who do. Since some people are superstitious, certain numbers are not picked by people very often, while other numbers are picked more often (eg. 49 in Lotto 649). Thus a person can maximize the amount of money that they can win by trying to choose numbers that are unpopular.

As discussed above, there are certain numbers or number sequences that people do not like to get. However, in most lotteries there is no real reason for this since ALL ticket numbers have the same probability of winning. After all, the lottery machines are not superstitious or have any conscious control to pick or not pick certain numbers. For example, in the Provincial, 0000000 has the same chance of winning as does 1234567 or 7245893 or 1313131.

In summary, lotteries don't return much of the money to the ticket holders. But keep on playing because the governments really need the money, especially the Federal Government (re. Sports Pool Select).

Igor

# Religion in Life

At university you will be introduced to many things, you will try new things and you will discard some old things. But through all of this change and turmoil, you'll probably ignore religion.

Everyone at this universty has been exposed to religion. Many of you practice your religion. I want to talk to those of us who are of Christian upbringing and who are apathetic regarding church.

Recently the Pope came to Canada. How did this affect you? I now know that there are over 800,000 Catholics in Toronto. The Pope had very little effect on me. I wonder if the Pope had a significant effect on anyone. We shall see if church attendance rises.

I lived in a Christian household. My parents were God-fearing. They led me to religion in the form of a Baptist Sunday School. They let me quit Sunday School, eventually. I can't truthfully say that it left a significant mark upon my psyche.

The more you read, the more you learn. Living in today's society made me cynical. I cannot take the Bible on faith. I believe in God but not in the Devil. Religion is merely a set of guidelines on how to live your life. Religion is a crutch. Religion is a way of enforcing behaviour.

I believe in God. I do not believe in Ministers, or Reverends, or Pastors. There is much about organized religion that I do not like. Evangelists leave a very bad taste in my mouth. Cults which take the very concept of reli-

## LookAhead

*A glance at upcoming events*

| Math Events | |
| --- | --- |
| Oct. 5 | Oktoberfest |
| Oct. 25 | Diamond Club Road Trip |
| **Fed Flicks** | |
| No movie for Thanksgiving | |
| - | |
| **Cinema Gratis** | |
| Oct. 10 Eye Of The Needle | |
| The Stranger Is Watching | |
| **Computers in Education** | |
| **Brown-Bag Seminars** | |
| - | |
| All lectures at 12:30 - 1:30 in CPH 3385 | |
| - | |
| Oct. 15 Computer Simulation For Environmental Modelling | |
| Oct. 22 Electronic Mail - Problems and Potentials | |
| Oct. 29 Using Computers for Intelligent Systems Analysis | |
| **mathNEWS dates** | |
| Oct. 8 **mathNEWS** *articles deadline* | |
| *Oct. 8* **mathNEWS** *production night, MC3038.* | |
| *Oct. 12 Next* **mathNEWS** *available* | |
| **UW Arts Centre** | |
| Call Humanities Theatre Box Office at | |
| 885-4280 for more info | |
| Oct. 9 *Wings* - Acadamy Award Winning Film | |
| Oct. 10 *The Edinburgh String Quartet* | |
| Oct. 12 *Andre Gagnon* | |
| **DCS Courses** | |
| *Free! One to three one-hour lectures;* | |
| *contact DCS to register.* | |
| Oct. 9,10,12 CMS Part II | |
| **For Co-ops Only** | |
| Oct. 22 Interviews Start! | |
| Nov. 8 Pick up job ranking forms. | |
| Nov. 9 Interviews end. | |
| Nov. 9 Ranking forms due. | |

## Graduation Photos

The Math Society is presently working with Forde Studios of Kitchener to arrange graduation photo sessions here in the Math and Computer Building later on this term, as well as photo sessions in the spring. The Fall sessions will begin on Monday Oct. 22nd, the Spring sessions begin on Monday Jan. 28, 1985. For the Fall session, proofs will be available for pick-up by Wednesday Nov. 7.

Please sign up for your sitting time as soon as possible. Lists and more information are available in the Math-Soc Office MC3038.

## Feedback

### *Re Self-Existence*

Dear Dr. Ernie,

No No No! The **Javid** school has defined God in terms of self.

Each perception (and/or interpretation, since interpretation is part of perception and definition of self) of a happening is a happening, thus each perception of a happening is necessarily different if self is defined by happenings; for if two happenings are percieved to be the same (ie. the happenings **are** the same) then the two selfs (selves?!) must also be the same to have percieved the happenings that way. Hence if there is any difference between selves (ie. more than one self) all happenings must be different for each self. (Better read that again—slowly!).

Now, the point: any interpretation that indicates that flaws exist in a self's happenings are the happenings of that self only. There is only a 'correct' perception if the self defines it. Hence any notion of God (or whatever you call the 'correct' perceiver) is a happening of each self only. Self has defined God, not vice-versa. This is not to say that there is no 'correct' perception, but that no self (other than the 'correct' perceiver) will ever know it. Thus to talk about anything absolute and/or rigidly defined is about as useful as trying to decide when the Leafs will next make the playoffs or when our football team will win a game. Such discussions are naturally affected by happenings such as the day of the week and blood-alcohol content, and who really cares?

Well, to paraphrase the immortal Dr. Foth: there's more fuzzification for the muddification. Thus endeth the response unto the lecture. Goodnight.

Dr. Bert

We regret that Dr. Ernie is currently out of town on important business affairs. When he returns, we shall attempt to publish his response to this impertinent upstart theorist.

## Frosh Award

Orientation 84 is pleased to announce the inception of the First Annual 'Garth Shut the F___ Up' Award to be presented annually to the most talkative frosh during Orientation Week. This year's lucky recipient is Sharon Holm. If you see her in the hall say 'Hi' but don't let her start a conversation or you'll be sorry.

Congrats Sharon.

gion and twist it into something exceedingly nasty I do not like. The Moral Majority I see as a threat. I object to the narrowness of view that religions have.

Recently the Jehovah's Witnesses came calling on me. One of them looked like my grandmother. I was polite and received some literature from them. I even read some of it. This got me thinking about religion. There was a small article about the Pope in New Guinea. About how a Pagan, in ceremonial dress, stood beside the Pope. The article felt that the Pope should not dirty himself by consorting with Pagans. This also leaves a bad taste in my mouth. Every person should worship God in their own way. This Pagan believes in a God which is no different to the God we believe in. His understanding, and methods of worship are merely different.

It seems to me that everyone has a right to freedom of worship. (I remember reading that somewhere). It also seems to me that more blood has been shed in the name of Religion than in any other. There are people who believe that Religion should be exempt from paying taxes. There are others who believe that the Churches are capitalistic exploiters of the poor.

One of my Professors told the class the following story: The Minister of a historic, old church in England was showing it to some American visitors. He described the church and some of the history behind it. When he came to the alter, an old, finely carved table, in front of the cross, he sat on it and asked if there were any questions. One American asked how the Minister could dare sit on such a holy object. The Minister replied, "This is only a building, and this is only a table. It is prop for the worship of God. In itself it is nothing special. A board set on bricks would serve the same purpose, and be as holy. This table is only 'holy' when it is being used to worship the Lord."

Certainly the role of the church in modern society is decreasing. I question, however, whether this is a good thing. The actions of the Moral Majority do not help to stem this trend. In the 80's I think people want help and comfort; they do not need fire and brimstone. The psychologists tell us that the confessional is very beneficial to our mental health.

I guess the trouble is the Church. Most Canadians believe in God because of their upbringing. It is too deeply ingrained to be ignored or changed. In a world of Cruise Missiles the Church is not seen as a valid alternative. Sure the Pope speaks about peace, but to some people he is a capitalist who profits from current world tensions. Should we tax Churches?

It is probably true that many people would benefit from regularly attending a Church. If nothing else it is a great way to meet people. There are a large number of lonely people in the world. It is very easy to meet people, in theory. The Church used to provide the focal point of the community. Loneliness was much reduced because the people knew you, and cared for you. We do not have this closeness of community.

But hey! You don't have to join the Church. Join a local baseball or hockey team. Join the bowling league or become a Kinsmen. You could join the Boy Scouts or the Girl Scouts. There is no need to be lonely. The church is not for everyone.

The Church could do a lot for the average person if it could convince him to join. I guess the question is: how to make these people join? There is also a second question: do we want to join?

Dr. Ernie

## mathSOC Fall 1984 Budget

### Revenue

| | |
|---|---|
| Balance Forward | $1725 |
| Student Fees | 14100 |
| Term Deposit Redeemed | 5000 |
| Photocopier | 1000 |
| Repayment of Orientation Loan | 1727 |
| Oktoberfest Tickets Profits | 900 |
| Sales of shirts, buttons, pins etc. | 900 |
| **Total** | **$21862** |

### Expenses

| | |
|---|---|
| C&D Loan Repayment | $4000 |
| C&D Loan Interest | 497 |
| Photocopier | 1000 |
| MGB | 700 |
| Mathletics | 850 |
| Phone | 800 |
| Pink Tie | 800 |
| Computer Science Club | 550 |
| General Meeting Expenses | 900 |
| Merchandise | 2500 |
| Fee Refunds | 175 |
| Orientation | 700 |
| Office Equipment | 750 |
| Office Supplies | 1000 |
| Office Cupboards | 1000 |
| Mathnews | 1800 |
| Election Expenses | 300 |
| Publicity | 300 |
| Social | 950 |
| Ballingers Road Trip | 80 |
| Cheap Trip | 80 |
| Diamond Club Road Trip | 100 |
| CFNY Road Show | 300 |
| Wine and Cheese | 500 |
| Video Night(s) | 400 |
| Oktoberfest Buses | 950 |
| Unspecified Events | 800 |
| Contingency | 1000 |
| Winter 85 Start-up | 1000 |
| **Total** | **$21572** |
| Net Surplus | $90 |

### Masthead

We did it again - another mathNEWS has been prepared. Thanks as always to everyone on the planet, without whom, there wouldn't be anyone. Special thanks to the special people - the contributors and the production crews; specifically

Brett Martin and Dr. Bret, Tim Watts (Photos and more), Igor (he because we couldn't find the corresponding comic strip), Rick and Brian (dropping in to eat pizza and help out),

Tom Ivey, this guy, knows and does enough to be a cc editor.

Look at that, $1800 for mathNEWS -$900 for Alfred $900 for me. We're the third largest expense. And just what is

"Unspecified Events".

Ernie, well you know I'm not very pleased with your article. It's rather long for our little paper, and it's also rather inconsistent. But thanks for all the help. I just hope we don't get too many religious philosophers responding.

Jane, sweet malicious Jane she'll tell you to get on your knees, then she'll tell you you're less interesting than a wall. Well, we always appreciate your coming but i do wish you would drop your insult Theory. Sorry John wasn't around to be turned down.

Thanks once again from Alfred and Jan.

Submissions to this journalistic wonder should be dropped in our mailbox outside the third floor smoking lounge. Production nights are Mondays about 7PM - come out and join the fun.