

REAL WORLD 100

An Introductory Course

MIDTERM \#1 - SOLUTION (Submitted by J. Vanderkooy)

Consider the system consisting of pulley " 1 ", mass " $x$ " and mass " $y$ ". Relative to the pulley, mass " $x$ " falls and mass " $y$ " rises at the same rate. Since $x>y$, the centre of gravity of the system falls. Therefore, since the system has mass $x+y$ and is falling, the tension it provides on the second rope must be less than $x+1$. Thus, the mass " $x+y$ " falls!

ASSIGNMENT \#4 (enough already with the pulleys!)

You are playing billiards on an elliptical table with its single pocket at one focus of the ellipse. There are two balls on the table: a cue ball at the other focus and an object ball at the centre of the table. Is there a cushion shot which pockets the object ball without a multiple carom?

For simplicity, assume that:

1. a ball drops if and only if its centre passes directly over the focus, and
2. the cue ball makes point impact with the object ball - no spin is transmitted.
(Cushion shot - the object ball touches the bank at least once. Multiple carom - the cue ball contacts the object ball more than once.)

## The Red Cross and The Math Society

..would like to personally thank all those people who helped with the Blood Donor Clinic on Monday night and Tuesday morning setting up and Tuesday night packing everything away again. We would also like to thank the $\mathbf{3 7 3}$ (that's a prime number) donors for all the blood. The next blood donor clinic will be on Nov. 29. We would like to mention the fact none of the staff of the math undergraduate office donated any blood at all.

## $\sim$ BLAT-FILL $\sim$

We asked the Honeywell for a comment on this issue. Here is the reply we received:
"Broadcast supervene; portmanteau feather streetcar transmit enumeration rattler. Depute; attach further licit lawless glad piston. Blackhead surveyor, substantial weiner rightness... sheet introduce subsidy tramp. Indissoluble canape deflect atmospheric sternum migration hygiene."

## Attention Co-op Students

Co-op Math students who will be on work terms in Winter /80 and returning to campus for Spring / 80 will be pre-registering during the period November 7-9/79. Students will be required to have their latest complete Student Registration Forms (schedules) with them when they pre-register. Any student who does not have his latest complete schedule should pick it up immediately at the Registrar's office. Students who have lost their latest schedules may request a re-cycled copy from the Registrar's Office and should do so immediately. Students will not be able to pre-register without their schedules.

## Want Adze

## Apartment to Share

Roommate needed immediately for large one-bedroom apartment. 485 Parkside Dr., Apt. 203. Fully carpeted, furnished, modern appliances, TV, laundry located in basement of building. Located 20 minutes from the UW campus by foot ( 3 minutes by car) and approximately a 5 minute walk from the Parkside Plaza (beer store, liquor store, Zehrs, Mac's Milk). Rent is approximately $\$ 105.00$ a month. Call John at extension 2324 or at 886-2319 (before noon) for more information.

## Prezz Sezz

"The time has come", the president said, "to speak of several things." Mostly foul ups and nasty rumours, but what can I do? I don't create the news, I just twist, pervert, and exaggerate it.

Item: The EMS library expansion has been scrapped amidst loud administrative squeals of protest. However, they still insist that one day the third floor lounge will be theirs.

Item: HKLS wants to move some offices into the third floor lounge.

Item: The third floor lounge is going to be awfully damned crowded unless the students are prepared to do something about it. (Perhaps a small demonstration of our power...)

Item: At October's Faculty Council meeting, notice was given of an intention to overturn the motion delaying the implementation of the essay requirements for math students. In plain English: Last winter Faculty Council passed a motion that requires all math students to pass two essay courses or equivalent in order to earn a B. Math degree. This fall Faculty Council decided that the list of essay courses was inadequate and delayed the implementation of the above motion until Fall 1980. Last month, some members of the faculty decided that the motion should still be implemented this fall. I sure hope they make up their minds before the frosh (who are the only ones here affected by all this) graduate.

Item: The 4th year coop ' A ' stream election scheduled for Monday, October 29 was rescheduled for Wednesday, October 31, and at last notice was in no danger of being rerescheduled. Results of said election will be announced next week.

Item: Internal Affairs Director Dean Edmonds resigned over the election foul-up. He was replaced by Al Fretter.

Item: Administrator Ted MacNeil resigned after an altercation with Speaker David Osterman. No replacement has been found as yet.

Item: Three new 1st and ind year councillors were ratified on Monday, but I can't remember their names. I'd look it up in the minutes, but writing the minutes was the Administrator's job and, like I said, he quit. Valerie has the temporary version of the minutes and I can't find her.

Item: I have four midterms and three assorted committee meetings over the next week, a council to patch up, and other varied presidentaal drudgeries to perform, so why am I using valuable time to write this stuff? If anyone knows, please let me in on it before I die from lack of sleep.

Excelsior,
Greg Bezoff

## BRCHKFEEO

To the editor of mathNEWS:
I wish to raise my objections to Geoff Cains' article "Murmurs from Mathsoc". Not only should such an opinionated article not appear as a news story on the front page of mathNEWS, but I don't feel that Mr . Hains has the right to draw the conclusions that he has.

There are many specifics that I disagree with, but I will limit myself to the implication that mathNEWS "is not good enough" for Mathsoc. The purpose of the information paper contradicts the purpose of mathNEWS. mathNEWS is not the place for such a paper. It is also not true that "they [Mathsoc] want to do little about improving it [mathNEWS]." Not only does Mathsoc fund mathNEWS, but also individual councillors contribute quite often to math NEWS.

In my own opinion both Mathsoc and mathNEWS could do with some improving. That was the intent of the discussion at the Mathsoc meeting that Mr. Hains "reported" on. I think it might be a good idea that mathNEWS print a survey on students' opinions on the state of both the society and mathNEWS and suggestions for their futures. Perhaps the opinions of students in Mathematics might be more appropriate than those of non-students like Mr. Mains.

## Dear mathNEWS,

An error has crept into your October 19 issue. The cartoons were drawn by Paul Robertson, not Nobenson as you have stated.

He's all set for drawing more so please don't misspell his name again. Thank you.
W.P. Kozlinski
(ed: we apologize to Pol for misspelling his name; it wont happen again.)

## Dear mathNEWS,

Is it true that some mathie has learned how to suck off the widjet? No wonder I can't get consistent responses.

A corncerned engineer P.S. Is it true that you're giving financial support to "gay" Lanny the despotic dictator and The Chevrag?


Sarah Metcalfe

## Anonymously Submitted Doggerel

A little something for those midterm blues. (Shamelessly stolen from an Ann Landers column)

Now I lay me down to study, I pray to the Lord I don't go nutty. If I fail to learn this junk,
I pray to the Lord that I don't flunk. But if I do, don't grieve for me, Just tell my teachers I did my best, And lay me in the study hall,
Hands crossed upon my chest.
Now I lay me down to rest,
And if I die before I wake,
That's one less test I'll have to take.

## Win 50 LP's

The Math Graduation Ball (MGB) Committee for 1980 is holding a Record Raffle with a grand prize of $\mathbf{5 0}$ albums of your choice from Records on Wheels. Each raffle ticket costs only $\$ 1.00$ and allows you $10 \%$ off a regularly priced album at Records on Wheels.

Watch for details on MGB's "Evening in Las Vegas" to be held the evening of November 30, 1979. The Record Album Draw will be held at this time.

Anyone interested in selling raffle tickets or helping out at the Casino Night, please contact Nancy, 745-0914 or John, 886-6168.

## FISHERICK

Have you ever encountered a queue, In which Poisson arrivals accrue?
In Statistics, I'm told
Such assumptions must hold...
..But it sure sounds more fishy than true!

## Late Posting

## THE UNIVERSITY OF WATERLOO

Invites Nominations For The Office Of

## DEAN OF MATHEMATICS

For a five-year term, commencing July 1, 1980
Nominations will be received until October 15, 1979
Please address replies to:
Mr. J.W. Brown, Secretary
Selection Committee for the Dean of Mathematics
Needles Hall, Room 3062
University of Waterloo
Waterloo, Ontario,
N2L 3G1

No work term experience necessary. For more information, contact the Permanent Employment Co-ordinator, Needles Hall.

"CRASH", Eh?

# FLAE FODTBALL 

## Broomball Results

Thursday, October 25
Math vs. The Hammer 31-12

In this final game of the regular season, "The Hammer" jumped off to an early lead with a touchdown on their first play. After the shock of this play wore off, the Math defence then took a sledgehammer to "The Hammer's" offence to hold them scoreless for the rest of the game. In between knocking down passes and sacking the quaterback, Math also racked up four interceptions, by Perry Best (2), Don Syms and Dave Dennis. When the defence had finished with "The Hammer", the offence took control by scoring four touchdowns and a single. Roy Danyk had a good game with three of his four receptions going for touchdowns. The other offensive TD was by Mike Robinson and the single was scored by the Math QB, Perry Best. Perry also ran back one of his interceptions for the last major score while playing defence.

General congratulations go out to the regular Math defensive squad, who played heads-up football all season. In this last game, the defensive squad also formed the Math offence, with the obvious results, an impressive victory. The players for this final game were,

> Perry Best Greg Bezoff* Roy Danyk Dave Dennis
Geoff Hains
Brian Hicks
Mike Robinson
Don Syms
Walter Steinemann
This list represents the core of the Math team, who made almost every game. Thanks again for the efforts of all players.

## D. Dennis

* Greg was helped off the field with torn knee ligaments with only four plays left in the game.

Saturday, October 27 Preliminary Playoff Game
Math vs. JOP
6-15
In this rematch against JOP (refer back to volume 21 , no. 4 for the account of the first game), Math fared a little better than the last time. Math's only points were scored by H. Crerar on an interception and runback for a touchdown. JOP's scores came on two touchdowns, a safety touch and a single. Our trouble in this game arose from having no quarterback to start with, and then losing another player to injuries in the game, leaving us one short for most of the game.

Congratulations to the JOP players for playing a much better game than the last one. There were a few exceptions, as is always the case, with some players ignoring the rules as in the last game. They were easily labelled by their loud protestations if they were caught at it.

Since the last article about a Math-JOP game, I have been approached numerous times by JOP players in reference to that article. Their concern has always been about my opinion of their team's conduct during the game. I believe I used the words, 'a dirty game'. In comparing that game to the others this season, I know that I was completely correct in my criticism.


Math vs. Recreation 2-5

In the second game of the season, Math was pitted against a much superior team from Recreation. Recreation's fast breaks and their ability to hem the Math team in their own zone made the game appear as lop-sided as the score indicates.

Math drew first blood with an early goal by Geoff Hains whose shot from the corner just managed to slip in between the post and the goalie. It wasn't long before the Rec team came back and scored three quick goals. Math's only other moment of glory came when Gary Dryden tipped in a pass from Geoff Hains which deflected off Walter Steinemann's flailing knee (actually it looked like Walter wanted to kick the ball into the net).

Except for a few fast breaks by the Math team, they were never really in the game at all.

If anybody is interested in playing CO-ED RECREATIONAL $B R O O M B A L L$ there will be a game at 1:00 on Friday (today) at Queensmount arena. Show up at Mathsoc at 12:30 if you want to play. Everybody is welcome.


## Ahem!

## dswelbourn:

I guess some sort of apology is needed for the last Gridword. Why five clues were missing, I don't know. The clues were written, but somehow they were edited out of the final product by process(es) unknown. Saurean about that! What? Bad puns? What are you talking about?...

## Process(es) unknown:

Don't look at me. I just work here... We got (as usual) four correct solutions to last issue's gridword, and they were by: (1) James R. Bakker; (2) Jan Gray \& J.J. Long; (3) the ever-popular "Me \& My Friends"; and (4) Kevin Librach \& Elvis Costello. Hold it a sec while I slip on my black cape and reach into the big top hat... and the winner(s) is/are: Jan Gray \& J.J. Long! As if you haven't got enough tea-shirts already.

$$
\begin{aligned}
& \text { DFFICIAL } \\
& \text { grioworro } \\
& \text { solution }
\end{aligned}
$$

## ACROSS

1a a square number
If a square number
1h a square number
2c digits sum to 35
3a square root of 11a
3d a square number
3 j a square number
4a square of 9 j
4e square of half 3 a
4 i three similar figures
5 b If times 9 a
5h a square number
6a 5 times 1 h
6 g all digits alike except the central one
7 b square of cl
7h see d5
8a a fourth power
8 e $4 i$ plus $8 i$
8 i a triangular number
9a 4 times 9 j plus 1
9 d digits sum to 18,3 middle figures are 3 's
9 j an odd number
10c all digits even but one, sum 29
11a a fourth power
11f a cube
11 h twice a square number

ABCDEFGHI JKLMNO


## DOWN

al a palindromic
a6 a square
a8 If to the fourth power
b3 digits sum to 30
cl square root of 8a
c4 sum of digits $=\mathrm{cl}$
c10 a square
dl 4 e plus 5 h
d5 4 e plus 7 h
d9 6 times 5 h
e2 a cube
e8 2 times 4a
f1 digits sum to 19
f7 square of 4 i
g2 a cube
g8 a triangular number
h1 digits sum to 26
h5 multiple of 19
h9 a cube
i1 3 j plus 9 a
i4 all similar figures, except
first which is 1
il0 a cube
j3 all similar figures
k1 a cube
k6 a square
k8 digits sum to 20 , end with 8

## Dean's Honours List



## Spring / 80 Pre-registration

Spring / 80 pre-registration will be held November 7-9 for Co-op students who will be on work term after Christmas. Details are posted throughout the Math building (pale blue flyer). Instructions and course offerings lists are available in the Math Undergrad Office (MC 5115). Calendar and replacements for lost computer-produced timetables are available from the Registrar's office.

## Winter Term Marking Jobs

Upper year undergraduates in an Honours programme are encouraged to apply for marking jobs if they have an overall average of at least $75 \%$ and at least $75 \%$ in the course(s) they wish to mark. Application forms for these positions (usually 30 per term) may be obtained from the receptionist on the 5th floor of the Math and Computer building. The duties involve approximately 3 hours/week for 11 weeks. The salary is $\$ 225.00$ payable at the end of the second month of term.

## Mathies!!

Graduating this year? Wondering what to do next year? If you are looking for an exciting challenge, for a new lifestyle, then you are looking for CUSO.

CUSO has openings for secondary school math teachers in Africa and other parts of the developing world. Your B.Math degree and a desire to teach overseas could meet the requirements.

After graduating from UW in 1977, I joined CUSO for a two year contract at a secondary school in northern Nigeria. Teaching a typical secondary school math syllabus, I was constantly aware that my students were among the first of a new generation of educated Nigerians. It's exciting to know that these are the students who one day will be leading their country to greater independence and self-determination. Do you want to help them? Then join CUSO.

If you are interested, then contact Kerrie Strathy, the CUSO coordinator on campus, ext 3144, or you can meet me, Richard Fanning, at an information meeting on Wednesday, November 14 at 7:30 p.m. in MC 3005.

Doesn't pay to get ahead of schedule, apparently. We actually started this week's issue with hopes of sleeping on Tuesday night. But NOOOO! ! Fate held otherwise, and so we come to you at the usual 4:45 am with the usual lack of inspired comment. Our crew was transient, due mostly to the Mathweek pics at the Arts Lecture Hall. Wow, wouldn't wanna miss Barbarella, or Bambi meets Godzilla (for the aleph-nullth time)... Dave Welbourn, Walter T.F. Steinemann, Geoff Hains the Ass., and yours truly provided the elbogreece this week, between fits of insane invention, games of csc/hangman (whoops! only $102 \%$ right, we're slipping!), expeditions to King Kong Subs, et alia. Trivia dept.: those of you who take classes in MC 2066 are doubtless not surprised to see that the clock, which was already an hour behind, was turned back last Saturday; as you read this, Mathweek is drawing to a close (which won't mean much to you if you didn't know it existed in the first place, like me); Donald Duck, being a mathematical pool shark, is hereby disqualified for jmrobinson's RW 100 problem. Sorry if you find this week's gridnum a bit harrowing. It was, of course, meant to be! KGDykes speaks again: "Quack!" This represents a major step in the linguistic evolution of a genius.

