Department of Mathematics

March 9, 2007

UNDERGRADUATE MATHEMATICS SEMINAR

Please keep your eyes open for posters announcing seminars in this last week of classes!!

Winter 2007 Math Final Exam Schedule

Thursday, March 15, 9:00 - 11:00 AM

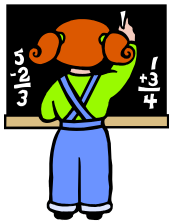
MTH*110*02	Calculus 1	Cervone	BAIL 104
MTH*112*01	Calculus 2	Lesh	OLIN 107+
MTH*115*02	Calculus 3	Zimmermann	BAIL 106

Thursday, March 15, 9:00AM - 12:00PM

IMP*112*01	Int Math/Physics 2	Black and Reich	NWSE 112

Friday, March 16, 9:00 - 11:00 AM

MTH*113*01	AP Calculus	Friedman	BAIL 102
MTH*115*03	Calculus 3	Barbanel	BAIL 201+
MTH*199*01	Intro to Logic & Set Theory	Niefield	BAIL 100

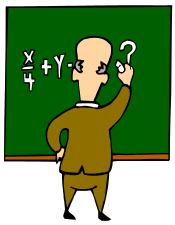


Monday, March 19, 9:00 - 11:00 AM

MTH*060*01	Mathematics & Politics	Taylor	BAIL 100
MTH*128*01	Probability	Barbanel	BAIL 207
MTH*340*01	Linear Algebra	Friedman	BAIL 104

Monday, March 19, 1:00 - 3:00 PM

MTH*112*02	Calculus 2	Zimmermann	BAIL 102
MTH*115*01	Calculus 3	Blue	BAIL 106



Tuesday, March 20, 9:00 - 11:00 AM

MTH*051*01	Cryptology: Math of Secrecy	Lesh	OLIN 107+
MTH*117*01	Calculus 4	Niefield	SSCI 016+
MTH*117*02	Calculus 4	Johnson	SSCI 016+
MTH*197*01	Discrete Math for Comp Sci	Taylor	BAIL 100
MTH*448*01	Differential Geometry	Cervone	GOLB 105+

Tuesday, March 20, 1:00 - 3:00 PM

MTH*101*01	Calculus w/Precalc	Zwicker	SSCI 012+
MTH*101*02	Calculus w/Precalc	Zwicker	SSCI 012+
MTH*224*01	Geometry	Tonnesen-Friedman	BAIL 100

Wednesday, March 21, 9:00 - 11:00 AM

MTH*130*01	Ordinary Differential Equations	Black	OLIN 106+

This is the last newsletter of the term!

Good luck on your finals!

Thank you, CHC Tutors! The last night that the Calculus Help Center will be open this term is Tuesday, March 13. Please join me in thanking all the tutors – **Susan Beckhardt, Jessica DiMarco, Michael Doctor, Dan Stevenson, Kelly Testa,** and **Peter Wright** – for their contributions to the success of this valuable resource.

Problem of the Newsletter: March 9, 2007

Congratulations to **Brandon Bartell '10, Susan Beckhardt '07, Patricia Linden '09, Schuyler Smith** and special problem solver, alumnus **Joe Maguire '82,** for submitting correct solutions to last week's problem of the newsletter. Not only did Joe solve the stated problem, he extended the result to arbitrary bases, *and* rings, *and* included a cultural note that shows the solution he describes is restricted to a written presentation by contrasting our oral presentation of numbers with that of the Yukis. We reproduce Joe's solution below.

Last week's problem: In the following multiplication problem, A, B, C, and D are different digits.

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  ABA
x  CD
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 CDCD
```

Find A+B.

Solution (JM): To solve for ABA, divide:
Then ABA equals CDCD / CD = (CD * 100 + CD) / CD = (CD * 100) / CD + CD / CD = 100 + 1. Consequently ABA = 101 and A = 1, B = 0 so that A + B = 1.

Note: Any mathematician operating in any base system (quaternary, octal, decimal, hexadecimal, etc…) could have written this solution, provided we assume the following: (1) the mathematical culture has achieved positional notation with a zero numeral as a placeholder. This is required to accommodate the strings "100" and "101." (2) The culture's base system has at least four numerals: base 4 or higher. This accommodates the four distinct numerals A, B, C, and D. (3) The culture uses the following typographical glyphs the same way we—those of us affiliated with Union College—do:

0 : zero, the identity element of addition and subtraction
1 : one, unity, the identity element of multiplication and division
= : equality
+ : addition
* : multiplication
/ : division
(
)

Further note: This curiosity is typographical, but not vocal. Two mathematicians sharing a spoken language but not a base would pronounce the string "100" differently. We Union College types pronounce it "one hundred," whereas an English-speaking member of the southern California Yuki Tribe would pronounce it "sixteen." (The Yukis, who do not count on their fingers but on the gaps between them, use base 4.)

If an English-speaking Yuki mathematician conveyed this solution to us over the phone he or she would utter the words "sixteen" and "seventeen" at various moments. The vocalized solution, unsupplemented with typography because we're using the telephone, would not make sense to our decimal ears.

About Joe Maguire: Joe Maguire ('82) is a consultant and author whose books (including Zero To Lazy Eight: The Romance of Numbers (Touchstone, 1994) and Mastering Data Modeling: A User-Driven Approach (Addison-Wesley, 2000)) about language, numbers, and metadata analysis have been reviewed favorably by The Boston Sunday Globe, The Mathematica Journal, The Data Access Newsletter, and National Public Radio. He has been a Program Manager for Microsoft, a writing instructor for Northeastern University, a process efficiency expert for the Pharmaceutical Industry, and a regular columnist for a magazine that perished before its first anniversary.

Here is this week's problem: How many integers n, $1 \le n \le 1000$, can be expressed as the difference of the squares of two nonnegative integers?

Resources for Students

Professor Peter Otto, who after three years at Union College is now at Willamette University in Oregon, wrote to announce that Willamette (along with Lewis & Clark College, Linfield College, and the University of Portland, all in Oregon) will be running an eight week REU beginning June 18 in four different research areas: 1) **Number Theory**: The Frobenius Problem (the Postage Stamp Problem), (2) **Differential Geometry**: Listening to Orbifolds and Orbigraphs, (3) **Computer Science**: Sensor Networks and Grid Computing, and (4) **Algebra**: Algebraic Geometry and Finite Group Theory. Interested students should visit http://www.willamette.edu/cla/math/REU-RET/ and note that applications are due April 6, 2007.