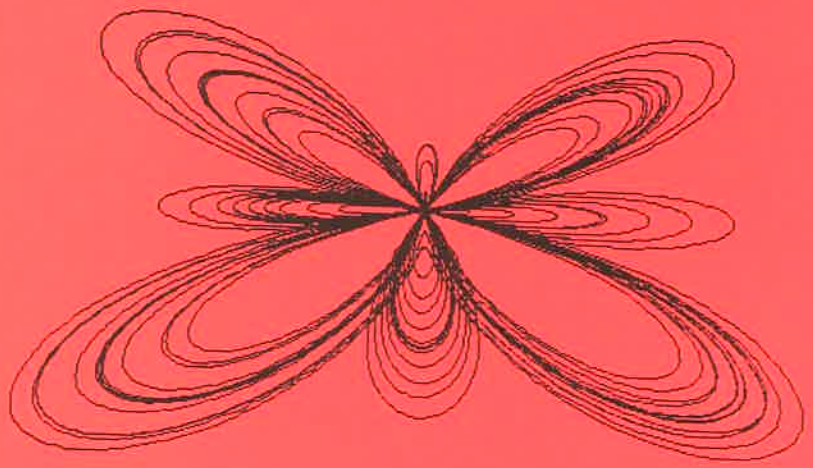
WASHINGTON COMMUNITY COLLEGE

MATHEMATICS CONFERENCE

1993



Wenatchee, Wash.

WELCOME TO THE

1993

WASHINGTON COMMUNITY COLLEGE

MATH CONFERENCE

May 6 - 8

Wenatchee, WA

Hosted by the

Highline Community College
Math Department

Diana Bender
Ron Burke
Ron Engstrom
Karen Frank
Brian Hogan
Ed Morris
Ed Newell
Tri Nguyen
Dick Plagge
Allan Walton
Joe Wilcox

CONTENTS

Schedule of Events

Thursday, May 6

5: 30 - 7	Registration (dinner on your own)
7 - 8:30	Talk from Don Hutchison "How I learned to love the TI"
8:30 - ?	Hospitality

Friday, May 7

7: 30 - 8: 45	Breakfast
9:00 - 11: 10	Morning Talks
11:30 - 12:30	Lunch
1:10 - 4:15	Afternoon Talks
4:15 - 5:00	WAMATC Meeting
6:00 - 7:30	No Host Cocktails
7:30 - 9:00	Banquet and Guest Speaker Dr. David Ferguson "Is There Really a Use for Mathematics in the Computer World?"
9:00 - ?	Hospitality

Saturday, May 8

7:30 - 8:45	Breakfast
9:00 - 11:20	Talks
11:30 - 12:00	Checkout
11:45 - 1:00	Lunch

ABSTRACTS

Friday morning
Session 1 - 9:00 - 9:50

Eric Schulz - Walla Walla CC
A demonstration designed for math faculty to show the benefits of current Windows software and how faculty may implement these products in their day-to-day work (both in the classroom and in the office). Software is from three categories: 1) Word Processing: Word for Windows, Scientific Word; 2) Math Processors: Mathcad for Windows, Maple for Windows; and 3) Graphical Spreadsheets: Excel for Windows.

Sonig Farag and Joyce Giles - CWU
A method for helping students of pre-calculus and intermediate algebra overcome common function composition errors.

Ronald Ward - WWU
Problem-solving situations in arithmetic and elementary combinatorics and probability. Unique pictorial languages (arrows and strings), some hand-held calculators, and the PAPY minicomputer. The idea is to interest and challenge adults who are still at the developmental level and to focus on their higher cognitive skills.

Friday morning
Session 2 - 10:20 - 11: 10

Jacek Kostyrko - Kenai Peninsula College, Alaska
This richly illustrated lecture demonstrates how the concept of function as a mapping can be employed to reorganize and enhance the teaching of college algebra and calculus. Among other topics, the method of solving equations numerically by means of attractors is discussed.

Carl Swenson - Seattle U
The PreCalculus revitalization Project is an NSF funded faculty enhancement project in the state of Washington. 24 participants from last summer's one week workshop are developing materials for this summer's workshop (June 14-18, 1993). Come for a preview of some materials which will later be available in a precalculus sourcebook.

Fred Fischer - NSCC
The structure of a new 2 quarter, 3 hours per week applied math course will be detailed. NSCC has had this course in place since fall of 92. In the 3 classes taught (89 students) there has been not one drop-out (no student-initiated W grade). Priority-based algebra (presented last year in Yakima) will also be reviewed.

Friday afternoon
Session 1 - 1:10 - 2:00

Amy Anderson - CWU
Some Properties of a Circumcircle. Let ABC be a given triangle, and M,N, and P be arbitrary points of the line segments BC, CA, and AB respectively. Let lines AM, BN, and CP intersect this circumcircle of ABC in points Q, R, and S respectively. Prove that $AM/MQ + BN/NR + CP/PS \geq 9$. (Mathematics Mag. Vol. 65, No. 3, June 92.)

Steve Hinthorne - CWU
A summary and comparison of the properties and rules of Euclidean, Spherical and Hyperbolic trigonometry.

Becky Montgomery - State Board, Office of Student Outcomes Research
For several months during the winter and spring of 1993, I have been visiting college faculty around the state. I have asked one big question: "When you think of math and quantitative skills on your campus, what is going well?" This is some highlights.

Tim Morrison - UW
The Mathematics of Compact Disc technology and how this mathematics can be used in examples, problems and projects for the classroom. Give information about the digital representation of sound and error correcting codes, which allow the CD to be played without errors even if some of the information on the disc has been lost because of scratches or other damage.

Friday afternoon
Session 2 - 2:10 - 3:00

James Harper - CWU
In an 1817 letter to Nature, Carles Dodgson (aka Lewis Carroll) described a couple of curious algorithms to determine the quotient when a number is divided by 9 and 11. I found his explanations of these algorithms to be unclear and his examples not helpful. After pondering over his letter for a while, I showed it to my 11-year old son. About 30 minutes later he explained to me how the algorithm works. We'll also look at the relationship between the 9 algorithm and the 10-adic numbers.

Yves Nievergelt - EWU
I will demonstrate how to compute the intersections of 2 conic sections, or 2 quadric surfaces in space (an elliptic curve), with applications to navigation and computed geometric design, mostly at the levels of pre-calculus through multivariable calculus. If you are interested in designing similar materials NSF will sponsor workshops in Seattle and Spokane.

Nick Nickoloff - SFCC
Teaching Intermediate Algebra as you would a Biology, Chemistry, or Physics Lab. I will share my experience lecturing 3 days per week to a large group, then breaking into small computer lab groups for 4 additional hours per week.

James Duemmel - WWU
How can we use computers to help teach beginning linear algebra courses? What kinds of things are worth trying? What have people tried that "works"?

Friday afternoon
Session 3 - 3:20 - 4:10

Carl Swenson and Andre Yandl - Seattle U
The number e can be characterized as the unique number with the property that $e^x \geq x^e$ for all positive x. One presenter will illustrate that this property can be discovered by students using computer graphics while the other will show that the usual properties of the number e can be derived from this alternative definition.

Helen Burns - WWU
Learning the Basics of the TI-81 Graphing Calculator. I will cover graphing, solving inequalities, parametric equations and basic functions of the TI-81, with hints on using this technology in a precalculus course.

Becker Sidney Smith - CWU
Some properties of a Quadrilateral inscribed in a circle. Solution of a problem proposed by Jiro Fukuta, Eiju-Ken, Japan, in the College Mathematics Journal (#490).

Janet Ray - SCCC
Expandable Problems: another look at the spiral approach. A few favorite problems that have variations rich enough to warrant consideration anywhere from algebra to calculus.

Saturday morning
Session 1 - 9:00 - 9:50

Janet Ray -SCCC - moderator
A panel of faculty who participated in the Washington Center's NSF funded workshops on calculus reform will relate their experiences with the new content and pedagogy.

James Duemmel - WWU
Does the harmonic series converge on a computer? Everybody "knows" it does. But does it - really? How long would it take? Is there anything about it that might help students understand the convergence of series.

Susan Gardsbane Cross - Everett CC
SKETCH THE GRAPH - CAN'T ASK THAT! Sharing session for test question ideas for college algebra and pre-calculus for classes using a graphics calculator. After the conference, the collection of sample test questions will be distributed. Bring your favorite examples to share.

Howard Hubbard - Shoreline CC
Functional Algebra is learned as a language; hence the meaning of the symbols guide the learning process. Traditional Algebra is based on Arithmetic which uses rules for processing number types and is more abstract. Functional Algebra is easier to do and more fun also.

Saturday morning
Session 2 - 10:30 - 11:20

Marjie Vittum-Jones - SSCC
The Group and College Algebra. The use of groups in College Algebra will add excitement to your course! Hear about my 4 quarter journey with cooperative learning through groups. I began with all tests, quizzes, worksheets, as group activities and ended with a balance between individual responsibility and community performance by using my own observations and student input throughout the process.

Paul Gamon - CWU
An Extension of the Stolz-Cezaro Theorem to a Banach Algebra of Continuous functions. It is proven that the Banach algebra structure alone [of C(X,R)] is insufficient to extend this theorem to C(X,R). However, by requiring our sequence of functions to satisfy the hypotheses of the initial theorem pointwise (as a sequence in R), a modified extension of the theorem is proven.

Earl Hamilton - NSCC
Geometry with Geometer's Sketchpad. A new course in Visual Geometry removes proofs and attempts to teach geometry with the MAC. I will discuss this course and give a demonstration of classroom tool.

Dave Hemme - SSCC and Highline CC
Teaching Math with Parables. I tell stories (with humor) to help students relate to word problems and mathematical vocabulary.

Gail Nord - Gonzaga
Some different ways of looking at theorems in pre-calculus and calculus and applying them to the classroom. If a student doesn't understand a theorem give them an alternate proof or demonstration of the theorem.

A special thanks to Wenatchee Valley College for providing the overheads for our speakers. THANK YOU!!

MATH CONFERENCE SCHEDULE

Thursday May 6 7 P.M. Don Hutchison - Clackamas Community College
"Graphically Speaking" or "How I learned to Love the TI"

Friday May 7

Breakfast (7:30 -8:45)

	E. Golden Delicious	W. Golden Delicious	E. Red Delicious
9-9:50	Eric Schulz Windows Software for the Mathematican	Sonia Farag & Joyce Giles SOcks and ShOes: Order of operations for college algebra students	Ronald Ward Higher Cognititive skills for Remedial Mathematics

Break (9:50 - 10:20)

10:20-11:10	Jacek Kostyrko Mappings, fixed points and all that in Algebra and Calculus courses	Carl Swenson The Precalculus Revitalization Project	Fred W. Fischer Priority-Based Algebra - Now in place at NSCC-

Lunch (11:30 - 12:30)

	E. Golden Delicious	W. Golden Delicious	E. Red Delicious	W. Red Delicious
1:10-2:00	Amy D. Anderson Some Properties of a Circumcircle	Stephen Hinthorne Three Trigonometries	Becky Montgomery A Snapshot of Statewide Projects	Tim Morrison Mathematics of Compact Discs
2:10-3:00	James D. Harper The Curious Division Algorithms of Lewis Carroll	Yves Nievergelt Computation & Applications of Intersections of Conics & Quadratics	Nick Nickoloff Teaching Intermediate Algebra as a Biology, Chemistry or Physics Lab Class	James Duemmel Computer Exercises for Elementary Linear Algebra

Break (3:00 -3:20)

3:20-4:10	Carl Swenson & Andre Yandl An Alternative Definition of the Number e	Helen Burn Learning the Basics of the TI-81 Graphing Calculator	Becker Sidney Smith Some Properties of a Quadrilateral inscribed in a circle	Janet Ray Expandable Problems: another look at the spiral approach

4:15-5:00 WAMATYC Meeting

No Host Cocktails 6:00 - 7:30

DINNER 7:30 P.M.

Speaker: David Ferguson -The Boeing Company
"Is There Really a Use for Mathematics in the Computer World?"

Saturday May 8

Breakfast (7:30 - 8:45)

	E. Golden Delicious	W. Golden Delicious	E. Red Delicious	W. Red Delicious
9-9:50	Janet Ray - moderator Implementing Calculus Reform - a panel-	James Duemmel Does the harmonic series converge on a computer?	Susan Gardsbane Cross SKETCH THE GRAPH - - CAN'T ASK THAT - - NOW WHAT!	Howard Hubbard Functional Algebra

Break (9:50 -10:30)

10:30-11:20	Marjie Vittum-Jones The Group and College Algebra	Paul Gamon An Extension of the Stolz-Cezaro Theorem to a Banach Algebra of Continuous Functions	Earl Hamilton Geometry with Geometer's Sketchpad David Hemme Teaching Math with Parables	Gail Nord A look at some theorems in Precalculus and Calculus

Lunch (11:45 - 1:00)

History of the Washington Community College Mathematics Conference

1993	Highline Community College	Wenatchee
1992	Yakima Community College	Yakima
1991	Pierce College and Tacoma Community College	Lake Chelan
1990	Clark College	Alderbrook
1989	Bellevue Community College	Lake Chelan
1988	Olympic College	Port Ludlow
1987	Lower Columbia Community College	Alderbrook
1986	North Seattle Community College	Alderbrook
1985	Shoreline Community College	Sun Mountain
1984	Green River Community College	Alderbrook
1983	Olympic College	Port Ludlow
1982	Highline Community College	Lake Chelan
1981	Spokane Falls Community College	Sun Mountain
1980	Spokane Falls Community College	Sun Mountain
1979	Olympic College	Port Ludlow
1978	Edmonds Community College	Providence Heights
1977	Shoreline Community College	Providence Heights
1976	Bellevue Community College	Snoqualmie Pass
1975	Highline Community College	Providence Heights
1974	Shoreline Community College	Lake Wilderness
1973	Seattle Central Community College	Snoqualmie Pass
1972	Everett Community College	Snoqualmie Pass
1971	Everett Community College	Snoqualmie Pass
1970	Spokane Falls Community College	The Lodge
1969	Green River Community College	The Lodge

The first Washington Community College Mathematics Conference and Retreat was held in 1969. Organizers were Phil Heft,Jim relf, Larry Larson, and John VanDruff. The cost was $16.68 and 33 participants met at "The Lodge" at Ashford with sleeping bags.

Future Hosts

1994	South Seattle Community College
1995	Skagit Valley and Whatcom Community Colleges

Interested in hosting a future conference?? If so let us know!!

Participants

Bellevue
Marilyn Anderson
Larry Curnutt
Susan Gronlund
Berthe Habib
Rebecca Hewitt
Dale Hoffman
Sasha Malinsky
Rose Pugh
Lynne Sage
Caroline Shook
David Stacy
Larry Susanka
Dana Updegrove

Clackamas
Don Hutchison

Clark
Paul Casillas
Marina Frost
Louise & Dale Hoover
Adam Jackson
Tracy Nehnevaj
Wes Orser
Bruce Ransom
Tom Reifenrath
Dennis Watson
Matt Weaver
Qing Zhang

Everett
Susan Gardsbane Cross
Nancy Spears

Big Bend
Donna Brown
Michael Krueger
Stephen Lane
Marte McPherson
Barbara Whitney

Boeing
David Ferguson

Central
Amy Anderson
Sonia Farag
Joyce Giles
Paul Gamon
James Harper
Steve Hinthorne
Wendy Maybin
Jim Rockholt
Becker Sidney Smith

Columbia Basin
Meg Gamon

Eastern
Yves Nievergelt

Edmonds
David Adams
Jim Francis
Barbara Maly
Jadwiga Weyant

Gonzaga
Gail Nord

Green River
David Bender
Christie Gilliland
Sally Glover
Donnie Hallstone
Phil Heft
Larry Larson
Doug Peterson

Kenai Peninsula
Jacek Kostyrko

North Seattle
Fred Fischer
Earl Hamilton
Hon Li
Robert Tighe
Harry Watts

Peninsula
Ronnie Cates
Marjorie Lindberg

Seattle Central
Dick Benson
John LaCoste
Janet Ray

Seattle U
Mary Ehlers
Wynne Guy
Janet Mills
Carl Swenson
Andre Yandl

Skagit Valley
Dick & Elizabeth Huffman
Joventina Schaffner
Chuck Stevens

Highline
Diana Bender
Ron & Diane Burke
Karen Frank
Ed Morris
Ed Newell
Dick Plagge
Allan & Sally Walton
Joe Wilcox

North Idaho
Susanne Lohr

Olympic
Martin & Teri Haines
Carson Hollingsworth
Glenlee James
Leo Maki
Lydia Moore
Scott Niven
Dave Sicks

Pierce
Diane Downie
Jim Erickson
Deb Falcioni
Tony Granata
Michael & Christine Lamka
Han Lim
Tom Phelps

Shoreline
Robert Gray
Howard Hubbard
Mark Parker
Steve Perry

South Seattle
Dave & Mat Hemme
Jerine Ridgway
Marjie Vittum-Jones

Spokane
Susan Dimick
Mary Lou Hammond
Calvin Lidstone

State Board
Becky Montgomery

Tacoma
Karen Clark
Mike Flodin
Rich Ganns
Anne Hafer
Dick Spangler
Trung Tran

WSU
James Jordan

Western
Helen Burns
James Duemmel
Susan Kaplan
Norm Lindquist
John & Betty Ann Reay
Donna Rochan
Ronald Ward

Whatcom
Ed & Theresa Moats
Doug Mooers
Beth Wood

Spokane Falls
James Brady
Kialynn Glubrecht
Rudy Gunawan
Judit Gyorffy
Barbara Harras
Curtiss Humphrey
Lars Neises
Nick Nickoloff
Kevin & Karen Olson

U of W
Steven Bogart
Melissa Mackey
Tim Morrison

Walla Walla
Eric Schulz

Wenatchee Valley
Janet Boley
Garrick Booth
Doyle Burke
Ann Gardner
Mike Lavinder
Naida Pino
Karla Scherer

Yakima
Roger & Ellena Knobel
Larry Ozanich
Beverly Parnell
Dan Schapiro

LOGIC PROBLEMS - At Highline Community College we believes logic skills are extremely important. In fact we teach logic as a unit in all our intermediate algebra courses. What other kind of problems could we offer!

Problem One

In the back room of a little saloon on the Vegas strip, five women sit huddled around a green-topped table. The game is poker, and the stakes are high. When all is said and done, can you tell each player's full name, home state, and how much she won or lost?

1. The Texan, who won the most, is not named Barnes.
2. The New Yorker, although a loser, did not lose the most.
3. Deb is not from New Jersey, and Betty is not from Nevada.
4. Ms. Byrne lost $4,000 and Joyce won $1,000.
5. Bonnie, who is neither Ms. Barnes nor Ms. Thomas won $1,000 less than Pamela.
6. The woman from New Jersey was the biggest loser.
7. Pamela won $3,000, which made her better off by $5,000 than Ms. Embry, who wound up a loser.
8. The Californian won the third highest amount.
9. Ms. Elliot organized the game.

Problem Two

Mr. Best and three of his bar buddies were discussing their ages, having little better to do, and discovered that:

1. The average age of the four men was two years lower than the average age of the three men other than Mr. Arkin.
2. Mr Clark was the oldest.
3. Fred was 10 years older than Mr. Dean.
4. Ed was 10 years older than Mr. Arkin.
5. Hal was 24 years old.

This important discussion took a long time during which:

6. Mr. Arkin drank more beer than George.
7. Ed outdrank Mr. Dean.
8. Hal outdrank Ed and
9. George outdrank Fred.

Armed with this earth-shattering information, can you determine each man's full name, his age, and the relative amounts of beer they put away?

Problem Three

1. There are five houses, each a different color, and inhabited by men of different nationalities, with different pets, drinks, and candy bars.
2. The Englishman lives in a red house.
3. The Spaniard owns a dog.
4. Coffee is drunk in the green house.
5. The Ukranian drinks tea.
6. The green house is immediately to the right of the ivory house.
7. The Snickers bar eater owns snails.
8. Mounds are eaten in the yellow house.
9. The Norweigian lives in the first house on the left.
10. Milk is drunk in the middle house.
11. The man who eats Kit-Kats lives in the house next to the man with a fox.
12. Mounds are eaten in the house next to the house where the horse is kept.
13. The man who drinks orange juice eats Oh-Henrys.
14. The Japenese eats Baby Ruths.
15. The Norweigian lives next to the blue house.

Who drinks water and who owns the zebra?

HAVE FUN!!

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