13th Annual Kansas City Regional
MATHEMATICS
TECHNOLOGY
EXPO

at the Richardson Science Center, Rockhurst University, Kansas City, MO
Friday and Saturday, October 3 and 4, 2003

Schedule of Events and Abstracts

We thank Rockhurst University for their generous hospitality in providing the lecture hall, classrooms, and exhibitor area, as well as computers, Internet connections and audiovisual equipment. We thank the Rockhurst students and faculty, who have given up their usual classrooms so that the EXPO could take place. Our thanks also go to the following individuals from Rockhurst for their technical support of the EXPO: Matt Heinrich, Director of Computing Services; Darnell Jones, Computer Support Manager; and Michael Marshall, Support Technician.

We thank the Kansas City Professional Development Council (KCPDC) for sponsoring many EXPO participants, and we thank Johnson County Community College and Pembroke Hill Schools for funding paper and printing for EXPO mailings, the program booklet, and EXPO packet information.

Registration in the lobby of Richardson Science Center:
Friday, 8:00 a.m. – 1:45 p.m., and Saturday, 8:00 a.m. – 1:00 p.m.

Complimentary continental breakfasts:
Continental breakfasts are available both Friday and Saturday mornings in the registration area, sponsored in part by Brooks Cole Thomson Learning and by KAMATYC/AMATYC.

Lunches:
Friday buffet and Saturday box lunches are both $7.50 apiece. Lunches were ordered with pre-registration, but there may be some available for purchase at the EXPO registration table.

Conference Lounge, Room 206
Friday, 10:15 a.m. – 3:30 p.m.; Saturday, 8:00 a.m. – 1:45 p.m.
Extra copies of handouts from talks will be placed in the Conference Lounge. Internet access is available.

Textbook, Hardware, and Software Exhibitors:
Friday, 8:00 – 2:45 p.m.; Saturday, 8:00 a.m. – 1:00 p.m. (Not all exhibitors will be present on Saturday.)
Academic Systems, Addison Wesley, Houghton Mifflin, Key College Publishing, MAA books, McGraw Hill, Minitab, Mu Alpha Theta, Prentice Hall, Quant Systems, Wiley.

Door Prizes (to be given away following the Invited Address and the Keynote Address)
Maple 9, Minitab 14, Geometer's SketchPad, ImagiMath software for the Palm OS 3.1, Scientific Notebook, TI Interactive, TI-89, TI Graph Link, and a TI-83+

FRIDAY, October 3, 2003

Welcome and Introductions
Friday, 8:30 a.m.
Room 115
Marian VanVleet, 2003 EXPO Group Chair, University of Saint Mary, Leavenworth, KS
Rev. E. Edward Kinerk, S.J., President, Rockhurst University, Kansas City, MO

SESSION 1 – Invited Address
Friday, 8:40 a.m. – 9:50 a.m.
Room 115

Creative Mathematical Modeling and Visualization Using EXCEL
Deane Arganbright
www.utm.edu/~darganbr/
University of Tennessee at Martin, Martin, TN

This interactive presentation provides a wide range of creative and innovative ways to do mathematical modeling and explorations on a spreadsheet. The illustrative examples show how a spreadsheet approach makes a surprising range of significant and interesting models available to a wide range of classroom use. Excel's graphic capabilities and user tools are employed to create innovative, eye-catching animated displays to illustrate and enhance the mathematical visualization and conceptualization.

Door prizes will be awarded directly following Deane Arganbright's address.

SESSION 2
Friday, 10:00 a.m. – 10:45 a.m.

2A.   *Using Mathematica Computer Simulation Exercises to Enhance Learning in*
Room 203   *Calculus-based Probability and Statistics*
         Paula Shorter, Rockhurst University, Kansas City, MO
         In this presentation, the speaker will provide specific examples of computer simulation
         exercises used in her two-semester probability and statistics course. She will also discuss
         further the rationale, general pedagogical principals, observed effectiveness, and potential
         difficulties in teaching key concepts in probability and mathematical statistics through the use
         of computer simulation exercises.
         Presider: Larry E. Long, DeVry University, Kansas City, MO

2B.   *Studying the Mathematics of Sound Waves and Harmonics Using On-Line*
Room 205   *Experimental Activities*
         Chuck Pheatt and Jorge Ballester, Emporia State University, Emporia, KS
         The speakers have authored a hands-on web-based implementation of a sound wave
         experiment. Students are able to conduct a real experiment to gain familiarity with important
         mathematics concepts relating to sound waves, harmonics, harmonic spectrum, frequencies,
         Fourier analysis and resonances. The computer interface allows students to manipulate and

analyze frequency versus time data on the web site or download the data for analysis on their local computer. This project is a continuation of research to develop several sustainable web-accessible experiments. This experiment allows students to record and analyze sound traveling thru a pipe of variable length. The instrumentation associated with the project allows for analysis of both frequency and loudness (decibel level) data.
http://pipedream.emporia.edu
Presider: John Soptick, Kansas City Kansas Community College, Kansas City, KS

2C.

Room 302

Correlation and Regression Analysis with the TI-83

Linda Hollingsworth, Northwest Missouri State University, Maryville, MO
This presentation will demonstrate the use of the TI-83 graphing calculator in the statistics classroom. The speaker and participants will explore the topics of correlation and regression analysis and possibly chi square testing. Bring your calculator!

The speaker has used this calculator during each class period for several years in her General Statistics classes. She also uses the TI-83 Plus each summer when she teaches statistics to the Upward Bound Math and Science high school students that attend a six-week program on campus. This calculator is very powerful, easy to use and a great time saver when working long and detailed problems. This allows the students to focus on the main idea of the statistical problem at hand without getting bogged down with number crunching.
Audience expertise: Familiarity with theTI-83 expected.
Presider: Libby Holmgren, Johnson County Community College, Overland Park, KS

2D.

Room 306

Teaching Graduate Mathematics Classes Over the Internet – An Update

Joe Yanik, Betsy Yanik, and Ton Boerkoel, Emporia State University, Emporia, KS
Two years ago the first speaker described his efforts to offer Internet versions of graduate mathematics courses. At that time he had just done a couple of small pilot projects with two or three students who were already part of Emporia's program. Based on these pilot projects, Emporia has begun offering full-fledged courses that are attracting students from all around the state. During the fall semester of 2002, Joe taught a Number Theory course, during the spring semester of 2003 Betsy taught a Numerical Analysis course, and Ton is currently teaching a course on Proofs — all done by the Internet. The speakers will describe the advantages, disadvantages, and pitfalls of this method of delivery.
http://www.emporia.edu/math-cs/yanikjoe/
http://www.emporia.edu/math-cs/faculty/profiles/yanikeli.htm
http://www.emporia.edu/math-cs/faculty/profiles/boerkoet.htm
Presider: Patrick Cassens, Missouri Southern State College, Joplin, MO

SESSION 3 *Exhibitors*
Friday, 10:45 a.m. – 11:30 a.m.

**Lobby and
Room 206**
This time is provided especially so that EXPO participants will have a chance to visit the Exhibitors in the lobby of the Richardson Science Center and also to visit the Conference Lounge, Room 206, where extra handouts from EXPO sessions will be located, and Internet access is available. The Exhibitors Area and the Conference Lounge will also be open at other times during the EXPO.

Friday, 11:30 a.m. – 12:15 p.m.

4A.
Room 203

Discussion: You Know When It Makes Sense to Use a Calculator.
Do Your Students?
Moderators: Richard Gill, Blue Valley High School, Stilwell, KS; and
Libby Holmgren, Johnson County Community College, Overland Park, KS
How many times have your students just automatically reached for the calculator when
asked a question? Or have your students been too easily convinced that the output of the
calculator must be the correct solution, regardless of reasonableness? The calculator can be
such a great tool in seeing a situation from multiple angles. We know that.

In this session we will share ideas that encourage students in the appropriate use of the
calculator, especially in future situations when we are not there to guide them.

4B.
Room 205

Discussion: Reality Technology – Deriving the Good from the Bad and the Ugly
Moderators: John Koelzer and Keith Brandt, Rockhurst University, Kansas City, MO
Have you ever tried what you thought was a great a computer demonstration in a class, but
after looking at the students' faces you realized that it fell flat? Or you prepared a hands-on
tutorial that you thought would really lead the students to discover a major concept, but they
got hopelessly bogged down in the details? Is a quick *Mathematica* demo enough for
explaining a topic or maybe a directed tutorial using calculators would be better, or maybe
some other approach...?

In this session we will share ideas for determining how to use technology appropriately in a
class to obtain a desired learning goal. We will also be looking at ways to use technology
more effectively and imaginatively in a classroom setting.

4C.
Room 302

Talk: A Bare Bones Guide to Beginning webMathematica
Mike Martin and Steve Wilson, Johnson County Community College,
Overland Park, KS
This demonstration session will show some of the simpler capabilities of *webMathematica*
software, followed by simple HTML and MSP coding to create web pages which use
webMathematica. The software demonstration will include basic interactivity, graphs, and
animations.
http://staff.jccc.net/swilson
http://www.jccc.net/~mmartin/
Presider: Jorge Ballester, Emporia State University, Emporia, KS

4D.
Room 306

Talk: Using Excel and Free Web-based Tools to Replace Statistical
Software Packages
Shonda Kuiper, Grinnell College, Grinnell, IA
This talk will give a brief explanation of advantages and disadvantages of Minitab, Jump,
SPSS, and SAS. Cost and availability sometimes make it difficult to use these types of
packages in education. The speaker will focus on how the uses of Excel or other
inexpensive web-based programs can be used in the classroom as a substitute for the

statistical packages. Included will be a discussion of how simple calculations can be done in Excel to generate confidence intervals and hypothesis tests, and to help students gain a better understanding of distributions. Based on the level of the student, it may prove really beneficial for students to do the actual programming in the classroom. In addition to encouraging the students to understand each step of a statistical process, programming should help students gain a better perspective of how slight changes in assumptions could dramatically affect the results.

Presider: Chuck Pheatt, Emporia State University, Emporia, KS

LUNCH

Friday, 12:15 p.m. – 1:30 p.m. in Massman Hall

SESSION 5

Friday, 1:30 p.m. – 2:15 p.m.

5A.
Room 115

Professional Collaboration at a Distance (Spreadsheets in Second-Year College Mathematics)

Deane Arganbright, University of Tennessee at Martin, Martin, TN
Web programs that are readily available can enhance significantly our ability to work at a distance with colleagues in a live environment on professional projects or classes. A demonstration of this will be carried out with the presenter at the conference and Dr. Erich Neuwirth at the University of Vienna in Austria. The constant use of these tools, including Yahoo Explorer for voice communication and Net Meeting for remote software interaction, was essential as they wrote a book on *Mathematical Modeling with Excel*. Illustrative examples will show the use of spreadsheets in the traditional second-year college mathematics classes of calculus, linear algebra, and differential equations.
www.utm.edu/~darganbr/
Presider: Brenda Reed, Lincoln University, Jefferson City, MO

5B.
Room 203

A Strategy for Computing Complex Solutions of Exotic Equations

Samuel Lynch, Southwest Missouri State University, Springfield, MO
This demonstration combines programming, graphing, and complex arithmetic capabilities of the TI-83 to exhibit the infinitely many complex solution of the equation: $x^4 - 4^x = 0$. Although knowledge of high school level precalculus is sufficient to benefit from the presentation, topics generally encountered in college calculus, and concepts from graduate level Approximation Theory and Complex Variable courses are cited in this talk.
Presider: Steven Wilson, Johnson County Community College, Overland Park, KS

5C.
Room 205

It's Not Java… It's CoCoA: Computations in Commutative Algebra

Russell Goodman, Central College, Pella, IA
CoCoA is a freely available special-purpose system for performing *C*omputations in *C*ommutative *A*lgebra. The system's principal area of expertise is that of operations over commutative rings of polynomials. Along with basic polynomial arithmetic, one can readily compute Grobner Bases for ideals of polynomials, factorizations of polynomials, the radical of an ideal, the dimension of an ideal, and more! The goal of this demonstration is to introduce the audience to the capabilities of *CoCoA* by leading the audience through a collection of examples and applications.
Presider: Kay Weiss, Oklahoma University, Norman, OK

1:30pm

5D.
Room 302
Increasing Student Participation via Online Communication in Undergraduate Mathematics Courses Using WebCT
Timothy Comar, Benedictine University, Lisle, IL
The speaker will show how he uses the course management system, WebCT, in his calculus and linear algebra courses. His main purposes for using WebCT are to increase student participation, streamline class discussion, encourage students to read the text, and promote an environment for students to resolve their own questions collaboratively. He will discuss the students' impression of using the WebCT tools, and he will compare the online behavior between the calculus students and linear algebra students. He will also comment on the instructor's time commitment and potential pitfalls of using such a system.
Presider: Ton Boerkoel, Emporia State University, Emporia, KS

SESSION 6

Friday, 2:30 p.m. – 3:15 p.m.
6A.
Room 125
How to Make Video Clips Yourself, at Very Low Cost! *JAME Concael*
The speaker will outline his experiences in preparing digital video clips by himself. The video clips were used as supporting material in a Calculus for Business and Economics course during the spring of 2003. All the mathematics courses taught at the SSEC are based on a 3-hour block schedule, and therefore contact with students outside the classroom is limited. To allow students more access to help, the speaker produced video clips of himself working through the practice tests he gives out before each exam. He then made these video clips accessible over the Internet. Included in the EXPO talk will be the following topics: recording digital video using an inexpensive web cam, editing digital video, adding sound recordings to digital video, delivery methods for digital video, why digital video would be compressed, how digital video would be compressed, problems and solutions.
Presider: Carl Anderson, Johnson County Community College, Overland Park, KS

6B.
Room 203
Geometer's SketchPad – Just the Basics
Richard Gill, Blue Valley High School, Stilwell, KS
Participants with no experience with *Geometer's Sketchpad* can become acquainted with the basic elements of the program. More advanced users who sit in on this session will receive worksheets which have been used successfully in the classroom. Activities will introduce new users to skills such as drawing points, circles, segments, rays and angles; measuring angles and lengths; creating parallel and perpendicular lines; and using the program calculator. Some of the new aspects of GSP 4.0 will be discussed as part of this session.
Presider: Eric Hall, University of Missouri – Kansas City, Kansas City, MO

6C.
Room 205
Combinatorics and Discrete Probability Using Microsoft Office
Merrill Goldberg, Rockhurst University, Kansas City, MO
These materials were developed by the speaker for a Finite Math class, and include several *Excel* spreadsheets, which serve to illustrate counting methods for discrete probability theory. In addition to calculations involving combinations, tree diagrams serve to present Bayes' Formula for flipped conditional probabilities. Simulations (based on the random number generator in *Excel*) illustrate common experiments of coin flipping, dice, roulette, and lotto. In addition to handouts, *Word* documents, presenting the topics, *Excel* spreadsheets illustrate key concepts while allowing the actual values to change according to

the demands of an audience. Color and conditional formatting techniques available in *Excel* enhance the readability and usefulness of the spreadsheets.
Presider: Timothy D. Comar, Benedictine University, Lisle, IL

6D.
Room 302
Do You See What I See? How Can We Tell What Students Really Learn in Lab Assignments?
Andy Bennett & Murthy Karri, Kansas State University, Manhattan, KS
When our students do computer lab assignments, do they see the things as we think they do? How do we know what they are doing, especially when they work over the web, when we aren't there to monitor them? Research in other disciplines notes that students often don't make the connections their teachers expect them to make, when doing lab work. This presentation will discuss how the speakers have added tracking capabilities to computer labs to allow instructors to check how students interact with the labs and to provide some insight on what learning is actually taking place.
www.math.ksu.edu/~bennett
Presider: Joe Yanik, Emporia State University, Emporia, KS

6E.
Room 306
Introduction to the TI-89 – How Is It Different From the TI-83?
Tamatha Leuschen, Pembroke Hill Upper School, Kansas City, MO
Across the country, students are bringing a variety of calculators into the classroom. Though most teachers of mathematics utilize the TI-83 series of calculators, more and more students are coming to class with the TI-89. This hands-on demonstration is designed to empower teachers by providing them with the opportunity to become familiar with the layout of the TI-89. During the demonstration, participants will have the opportunity to explore the differences between the TI-83 and TI-89 keystrokes for basic operations, matrices, 2-D graphing, equation solving, and more. Participants will be provided with handouts on the material covered during the demonstration.
Presider: Betsy Yanik, Emporia State University, Emporia, KS

POST-SESSIONS for KAMATYC and MOMATYC
Friday, 3:30 p.m.
Room 302   MOMATYC – informal meeting
Room 306   KAMATYC – informal meeting
(Interested KAMATYC and MOMATYC participants will go to supper together after the meetings.)

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SATURDAY, October 4, 2003

Welcome and Introductions
Saturday, 8:30 a.m.
Room 115
Marian VanVleet, 2003 EXPO Group Chair, University of Saint Mary, Leavenworth, KS

SESSION 7 – Keynote Address
Saturday, 8:40 a.m. – 9:50 a.m.
Room 115

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Internet-Based Courses in Geometry, Calculus, and Liberal Arts Mathematics
Thomas Banchoff
www.math.brown.edu/~banchoff/
Brown University, Providence, RI

Internet-based courses can use recently developed, increasingly accessible, software for providing interactive demonstrations and new modes of communication between instructors and students and among students. How can we use this technology to improve teaching and learning at all levels? This presentation will feature Internet-based courses in multivariable calculus, the geometry of. curves, and a liberal arts course on The Fourth Dimension, and will involve Edwin A. Abbott's *Flatland* to Salvador Dali's *Corpus Hypercubus*.

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Door prizes will be awarded directly following Thomas Banchoff's address.

SESSION 8
Saturday, 10:00 a.m. – 10:45 a.m. (or 10:00 a.m. – 11:45 a.m. for the workshops)

8A.   ***WORKSHOP: Dynamic Graphing in 2-D and 3-D Using Excel®***
Room 203   **Ron Palcic and Chris Imm, Johnson County Community College, Overland Park, KS**

In this workshop the speakers will use Excel® spreadsheets for graphing 2-D and 3-D models in mathematics. The purpose of the workshop is to demonstrate the very easy technique to produce movable graphs with the use of "sliders," utilizing the power of the spreadsheet program.
Presider: Jacqueline Maxwell, Wentworth Military Academy, Wellington, MO

8B.   ***WORKSHOP: Geometry and Matrix Groups in Linear Algebra, Using Derive***
Room 205   **Timothy Comar, Benedictine University, Lisle, IL**
The speaker will present several activities using the software *Derive* to integrate geometric and group theoretic notions into a linear algebra course via matrix actions on vector spaces and matrix multiplication. These activities provide additional geometric content to the mathematics major and ease the transition to more abstract courses in algebra. Participants will receive handouts and *Derive* files. Participants will work through the explorations with

assistance from the presenter. Participants not familiar with hyperbolic geometry or topology are strongly encouraged to attend, as appropriate mathematical background will be discussed.

Presider: Rick Silvey, University of Saint Mary, Leavenworth, KS

8C.
Room 302

PANEL: Mastery and Gateway Exams

Cathleen O'Neil, Johnson County Community College, Overland Park, KS; John Orr, University of Nebraska, Lincoln, NE; Michael Scott, Kansas State University, Manhattan, KS; and Joe Yanik, Emporia State University, Emporia, KS

The panel members' gateway/mastery testing experiences are in calculus and a teacher preparation course. They will discuss and give their opinions on: why the tests were instituted, how long the mastery/gateway tests have been used, the courses/topics that are included, how the tests were incorporated into the coursework and grading, how technology is/was used to implement and score the tests, and the effectiveness of the tests.

Moderator: Joe Kincaid, University of Phoenix, Kansas City, MO
Presider: Libby Holmgren, Johnson County Community College, Overland Park, KS

8D.
Room 306

Computer Graphics as Applied Mathematics

Andy Bennett, Kansas State University, Manhattan, KS

Most mathematicians think of physics when they think of applied mathematics. But computer graphics provides a rich source of applications of matrix algebra and geometry and is a topic many of our students are very interested in. This talk will go over some of the basic mathematical ideas behind simple computer graphics. The audience for this talk should be anyone with an understanding of matrices and vectors.

www.math.ksu.edu/~bennett

Presider: Betsy Yanik, Emporia State University, Emporia, KS

SESSION 9

Saturday, 11:00 a.m. – 11:45 a.m.

9A.
Room 115

Twice as Old–Again, and *Complementary Coffee Cups*

Thomas Banchoff, Brown University, Providence, RI

Really new calculus problems are rare. They can be suggested by chance observations, and then developed in collaboration with the students in the course. One topic arose when the speaker's older daughter noted at one point that he was twice as old as her younger sister for a second time.

The second problem came from observing that two cups that somehow fit together happened to have the same volume. What do students do given those statements?

www.math.brown.edu/~banchoff/

Presider: Andy Bennett, Kansas State University, Manhattan, KS

9B.
Room 306

From College Algebra or Pre-Calculus to Non-Linear Dynamics: Composition of Functions

Andreas Soemadi, Kirkwood Community College – Iowa City Campus, Iowa City, IA

In this presentation the participants will see how composition of functions, often encountered early in College Algebra and Pre-Calculus, can be utilized to initiate an excursion to the
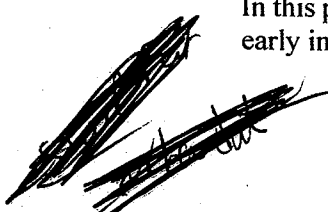
ideas of self-similarity and chaos. The Mandelbrot set, the Julia set and the bifurcation of the quadratic map, etc., will be constructed using *Mathematica*, as examples of composition of functions. This session will particularly benefit mathematics instructors who prefer the geometrical approach over the analytical approach in facilitating understanding in PreCalculus, College Algebra, and Calculus.
www.soemadi.com
Presider: Uwe Conrad, Cowley County Community College, Wichita, KS

LUNCH
Saturday, 11:45 a.m. – 1:00 p.m. in Massman Hall

SESSION 10
Saturday, 1:00 p.m. – 1:45 p.m.

10A.
Room 203

Geometer's SketchPad – Advanced Techniques

Richard Gill, Blue Valley High School, Stilwell, KS
Participants will explore some of the more advanced aspects of the *Geometer's Sketchpad* program. In particular, this session will highlight some of the important differences between version 4.0 and previous versions. Participants will create and use tools in sketches, will animate a sketch, and will graph functions. Other advanced topics will be discussed as time allows.
Presider: Rick Silvey, University of Saint Mary, Leavenworth, KS

10B.
Room 205

Using ALEKS in an On-line College Algebra Course

Joe Kincaid, University of Phoenix, Kansas City, MO

Many attempts to leverage the power of the Internet for education have been introduced. The *ALEKS* system, developed by researchers in knowledge spaces and marketed now by McGraw-Hill, is yet another approach to computer-based learning. *ALEKS* is an acronym for *A*ssessment and *LE*arning in *K*nowledge *S*paces. This talk will demonstrate the *ALEKS* system and explore its strengths and weaknesses in the context of an online College Algebra course at the University of Phoenix.

You can learn more about ALEKS at http://www.highed.aleks.com/

Presider: Jim Carlson, Neosho County Community College, Chanute, KS

10C.
Room 302

PDAs – They're Not Just For Scheduling Anymore

Tamatha Leuschen, Pembroke Hill Upper School, Kansas City, MO
With their smaller price tags and powerful applications, handheld computers are now providing educators with an affordable way to place technology in the hands of every student. Participants will be introduced to some of the latest education software available for handheld devices. Software by Imagiworks (ImagiGraph™, ImagiCalc™, and ImagiSolve™) will be used to demonstrate how PDAs can now function as graphing calculators. In addition to the purchasable software packages some shareware software will be demonstrated during the session. Participants will be provided with handouts and Software demo CDs (including a 14 day trial of Imagiworks).
Presider: Judy Austin, Penn Valley Community College, Kansas City, KS

4pm

10D.
Room 306

DISCUSSION: Where Do We Go From Here?
Guiding the EXPO Through Its "Teens"
Moderators: Richard Delaware, University of Missouri – Kansas City, Kansas City,
MO; and David Ewing, Central Missouri State University, Warrensburg, MO

Since the EXPO began in 1991, we in the Steering Committee having listened to all of you
who have attended and suggested changes in either the organizational structure of the EXPO,
or its mathematical, pedagogical, and technological content. For instance, your remarks over
the last 12 years are the reason we have talks of 45 minutes, have 15 minute breaks between
talks, have an Exhibitor time on Friday when no talks are scheduled, have on separate days
both a major Keynote Speaker and a second major Invited Speaker, maintain an overall
careful attention to structural details, and solicit talks and workshops both timely and rich
with the content you desire communicated by accurate (and sometimes even vibrant!) titles
and abstracts. The continuing success of the EXPO is the direct result of your contributions.
As we enter our 13th year (our "teens"), this Discussion is inserted to offer you a forum for
your thoughts on the future direction of the EXPO. Tell us what you think we need to
add, subtract, extend, or reorganize. Everything is open to lively consideration. We'll be
taking written notes! (and will post them on the EXPO website.)

**If you would like to contribute to this discussion, but cannot attend, you may send your
thoughts by email to moderator Richard Delaware no later than midnight of
Wednesday Oct. 8, 2003 to delawarer@umkc.edu .**

The 2003 EXPO Group:

- Marian VanVleet (1999 - 2003 Chair), University of Saint Mary, Leavenworth, KS, vanvleetm@stmary.edu
- Carl Anderson, retired from Johnson County Community College, Overland Park, KS, canders33@yahoo.com
- Andy Bennett, Kansas State University, Manhattan, KS, bennett@math.ksu.edu
- Keith Brandt, Rockhurst University, Kansas City, MO, keith.brandt@rockhurst.edu
- Richard Delaware (1993 & 1994 Chair), University of Missouri – Kansas City, Kansas City, MO, delawarer@umkc.edu
- Ken Eichman (1997 & 1998 Chair), Longview Community College, Lee's Summit, MO, Ken.Eichman@kcmetro.edu
- David Ewing, Central Missouri State University, Warrensburg, MO, ewing@cmsu2.cmsu.edu
- Richard Gill, Blue Valley High School, Stilwell, KS, rgill@bv229.k12.ks.us
- Libby Holmgren (1995 & 1996 Chair), Johnson County Community College, Overland Park, KS, lholmgre@jccc.net
- John Koelzer (Site Coordinator & 2003 Financial Secretary), Rockhurst University, Kansas City, MO, John.Koelzer@rockhurst.edu
- Tamatha Leuschen (2003 Recording Secretary), Pembroke Hill Upper School, Kansas City, MO, tleuschen@pembrokehill.org
- Kay Weiss (1991 & 1992 Chair), University of Oklahoma, Norman, OK , kweiss@ou.edu
- Joe Yanik, Emporia State University, Emporia, KS, yanikjoe@emporia.edu

Events/Activities in Kansas City:
www.kansascity.com