VOLUME 41, NUMBER 3 FALL 2012

California Mathematics Council Community Colleges

CMC³ NEWSLETTER

Monterey 2012 Conference

Mark Harbison, Sacramento City College

Plan on attending the 40th Annual CMC³ Fall Conference at the Portola Plaza Hotel and Spa in Monterey, CA. Registration forms are available at http://www.cmc3.org/conference/Monterey12/Monterey12.html.

Table of Contents

Printed forms have also been postal-mailed to every current member of CMC³. [Thanks to Sacramento City College for the in-kind photocopy donation]. Please contact me for any concerns about the mailing, if necessary.

On Friday, December 7, Registration is open from 2:30 to 6:30 pm near the hotel lobby. Then a reception from 7:00 to 8:00 pm will be the warm-up for a special keynote address by Dr. Henson.

Van Emden Henson (Lawrence Livermore National Laboratory) will deliver a keynote address entitled, "A Child's Garden of Graphs: how a pinch of linear algebra, a smattering of graph theory, and a spoonful of computer science is dominating your life." In this talk, Dr. Henson asks a set of questions: "How do Amazon and Netflix determine what products to offer you, based on what you purchase? How do Google, Bing, and Yahoo determine what to list in response to your query? How do Facebook or Linked-In determine who might also be your friend or colleague? How does Mapquest decide what routes to suggest?"

An astonishing array of problems are answered these days with a novel blend of linear algebra, graph theory, and computer science. This talk explores some of these problems and shows that the solutions are both remarkably simple and simultaneously extraordinarily challenging to

(see "Monterey 2012 Conference" on p. 3)

Executive Board & Special Committees

President: Susanna Gunther, Solano Community College, (707) 864-7000, ext. 4614, susanna.crawford@solano.edu

Past President: Barbara Illowsky, De Anza College (408) 864-8211, illowskybarbara@deanza.edu

President-Elect: Mark Harbison, Sacramento City College (916) 475-9461, harbism@scc.losrios.edu

Secretary: Greg Daubenmire, Las Positas College (925) 373-3085, gdaubenmire@laspositascollege.edu

Treasurer: Rebecca Fouquette, De Anza College 408-864-5522, fouquetterebecca@fhda.edu

Members-at-Large:

AMATYC Liaison: Marcella Laddon, Cabrillo College (831) 479-5734, maladdon@cabrillo.edu

Adjunct Advocate: Tracey Jackson, Santa Rosa Junior College, tkkjackson@yahoo.com

Articulation Breakfast: Steve Blasberg, West Valley College (408) 741-2564, steve_blasberg@westvalley.edu

Awards Coordinator: Katia Fuchs, City College of San Francsico, (510) 325-1616, efuchs@ccsf.edu

Business Liaison: Randy Rosenberger, Sacramento City College, rosenbr@scc.losrios.edu

Campus Reps Coordinator: Tracey Jackson, Santa Rosa Junior College, (707) 527-4356, tkkjackson@yahoo.com

CMC Liaison: Jenny Freidenreich, Diablo Valley College, (925) 685-1230 x2302, JTheSmith@comcast.net

Conference AV Specialist: Larry Green, Lake Tahoe Community College (530) 541-4660 ext. 341, drlarrygreen@gmail.com and Steve Blasberg, West Valley College (408) 741-2564, steve_blasberg@westvalley.edu

Fall Conference Chair: Mark Harbison, Sacramento City College (916) 475-9461, harbism@scc.losrios.edu

Fall Conference Speaker Chair: Wade Ellis, West Valley College (retired), (408) 741-2568, wellis@ti.com

Volume 41, Number 3 Fall 2012

CMC³ Newsletter is the official newsletter of the California Mathematics Council, Community Colleges, and is published three times a year--in the spring, summer, and fall.

Copyright© 2012 California Mathematics Council,

Foundation President: Debra Van Sickle, Sacramento City College, (916) 558-2476 vansicd@scc.losrios.edu

MAA Liaison: Wade Ellis, West Valley College (retired) (408) 741-2568, wade_ellis@westvalley.edu

Membership Chair: Joe Conrad, Solano Community College, (707) 864-7000 x 4372, Joseph.Conrad@solano.edu

Monterey Hotel Chair: Rob Knight, Evergreen Valley College, robknight@charter.net

Newsletter Editor: Jay Lehmann, College of San Mateo, (650) 863-5305, MathNerdJay@aol.com

Spring Conference Chair: Larry Green, Lake Tahoe Community College (530) 541-4660 ext. 341, drlarrygreen@gmail.com

Spring Conference Speaker Chair: Mark Harbison, Sacramento City College (916) 475-9461, harbism@scc.losrios.edu

Web Page Coordinator: Larry Green, Lake Tahoe Community College (530) 541-4660 ext. 341, drlarrygreen@gmail.com

Follow us on Facebook

Mark the Date

The Monterey CMC³ Conference will be on December 7-8, 2012. Attend great presentations, meet faculty at other colleges, enjoy the beautiful scenery. See the front page for more details.

Monterey 2012 Conference

(continued from p. 1)

implement. The sheer sizes of the data sets demand large-scale processing on massive computers, supercomputing parallel processors, or in the cloud. After describing some of the basic algorithms and tying the linear algebra and graph theory, the talk will explore some of the computational challenges and hint at the solutions that are (and will be later) employed to overcome them.

Also on Friday will be "Game Night" hosted by Pearson Higher Education: a free and fun evening of Wii, board games, card games, etc. that starts around 9:00 pm.

The Saturday (Dec. 8) Keynote speaker at 1:00 pm will be Keith Devlin from Stanford University, better known as "the Math Guy" on NPR. He will discuss THE SYMBOL BARRIER - Using video games to overcome the greatest obstacle to good mathematics learning.

Devlin's abstract: Most current mathematics education video games are essentially new delivery mechanisms for traditional instruction. In the coming decade we should see classroom pedagogy start to change in significant ways, as we learn how to take full advantage of what the medium offers. Based in part on Devlin's book Mathematics Education for a New Era: Video Games as a Medium for Learning, published in March 2011 by AK Peters.

Also on Saturday, the annual "Estimation Walk/Run" will start at 7:30 am. An accurate estimation of your time is more important than crossing the line first. Great fun!

Also on Saturday, Registration opens at 8:15 am. The Exhibit Hall opens at 8:30 am. Door prizes are raffled at 5:15 pm in the

(see "Monterey 2012 Conference" on p. 17)

The Monterey Poster Session is Continuing Strong

By Rebecca Fouquette, De Anza College

Due to sustained success, CMC^3 presents the third annual Monterey Conference poster session. We were happy to have had five posters at our last conference and successfully awarded two scholarships. We hope to see even more participation this year.

Our poster session offers community college students a chance to participate in our conference though the creation of a poster to display. Posters can involve any level of mathematics that extends the usual curricula (no book problems!). Independent study projects or modeling problems are encouraged. There is no fee to enter, and the students get free registration. We will again be offering a $75 scholarship for first place and $25 for second place. Check out our website www.cmc3.org for past posters.

Requirements: For a student to submit a poster, he or she

- should be a current community college student for Fall 2012,
- have a current CMC^3 faculty member who will attend the conference agree to sponsor them,
- provide an easel to display their work, and
- must able to attend the conference.

Posters will be displayed during the Saturday conference. Students are asked to be available to answer general questions on their poster at the end of lunch from 12:30-12:45 and during their assigned judging time. Posters will be judged on mathematical content, student explanation of their poster, and overall poster appeal. Students are encouraged to prepare a two-three-minute synopsis

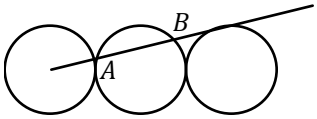
(see "Poster Session" on p. 17)

Brain Strain

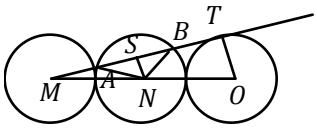
Joe Conrad, Solano Community College

Welcome back after what I hope was a fun and relaxing summer! Here is a problem that will get your brain moving: Let x and y be two (possibly) complex numbers. If the sum of their squares is 7 and the sum of their cubes is 10, find the maximum real value of $x + y$.

The problem from the last issue was: Suppose there are three circles with the same radius, r, and collinear centers as in the figure. A line is drawn from the center of one of the outer circles so that it is tangent to the other outer circle. If A and B are the points of intersection of the line with the inner circle, find the length of segment AB.



Solutions were sent in by Fred Teti, John Martin, Paul Cripe, Mel Hom, Brenda Weak and Kevin Olwell. Some solvers used trig to get the result, but most solutions used elementary geometry as follows. Let the centers of the circles be, from left to right, M, N and O and the point of tangency of the line on the right circle be T. The radius OT forms a right angle with the line, so triangle MTO is right. Construct the perpendicular line segment from the line through N at S.



Now, triangle MSN is similar to triangle MTO. Since $|MN|$ is half of $|MO|$, $|SN|$ is half of $|TO| = r$. Since $|AN| = r$, we can use the Pythagorean Theorem to find that $|AS| = \frac{\sqrt{3}}{2} r$, so $|AB|$, which is twice $|AS|$ since triangle NAB is isosceles, has length $\sqrt{3}r$.

Enjoy the new problem and, as always, send solutions to:

Joe Conrad
Solano Community College
4000 Suisun Valley Road
Fairfield, CA 94534
joseph.conrad@solano.edu

Technology in Teaching and Learning – Boon or Bust

Wade Ellis, Jr., West Valley College

This article will discuss the use of technology in organizing and presenting written material, presenting instructional video clips, and in providing students with tools for doing and learning mathematics.

Online textbooks provide the science and mathematical teaching community the opportunity to present written material in a flexible, easily updated, internet-linked format. The COSDL (California Open Source Digital Library) is a newly created entity that will house free open-source textbooks and courseware created under the auspices of the COERC (California Open Education Resources Council) as authorized by SB1053 and SB 1052. The $10 million (5 public, 5 private foundations) initial funding seems adequate for supporting the creation of a variety of quality course materials for high-enrollment introductory courses in psychology, sociology, political science, chemistry, biology, developmental mathematics, calculus, statistics, art history, and English. Are we thinking about how best to use such digital materials? Will the use be different from our use of standard hardcopy textbooks? The financial benefit to

students is enormous. What about the intellectual benefit? Will it be much better or worse? How will we know?

The ongoing maintenance of these course materials is an issue. Will the financially hard-pressed California state government be willing to provide the ongoing support that is needed to update science courses. For instance, who will update the biology materials with the daily changes announced in newspapers on the nature of junk DNA as very important control switches that determine the behavior and timing of biological events in plants and animals? The changes in methods of statistical analysis and exploratory data analysis will also need to be incorporated in these new learning and teaching materials. Who will do this and how will they be compensated? Will developmental editors, copy-editors, graphics artists, reviewers and fact-checkers be employed and how will they be compensated in the long run?

Instructional video clips like the ones available on the Khan Academy website for many disciplines including developmental mathematics are of high quality in the sense that perhaps more students view them than read our very expensive, commercially-available textbooks. These video clips are not perfect and by all accounts contain errors (as do our textbooks), but there might be some way that we can use them in developmental mathematics courses to improve student performance without dumbing down our courses. We might even be able to increase development of Higher Order Thinking Skills by leaving the lower order computational skills to be developed by Khan Academy or ALEKS materials. We should be thinking about how to integrate these powerful tools into courses. In much that we do, we are trying to change students attitude toward themselves as learners and toward our discipline. I believe that this cannot be done by looking at a computer screen without some substantial interaction with other human beings (instructors and other students).

Whether we like it our not, we have entered into an instructional world with an amazing amount of fast developing technology (some old like TV clips, some new like smartphones).

Mathematical software like Maple, Mathematica, TI-Nspire, Geogebra, Minitab and Crunch can be used by students to solve problems and also to learn mathematics. These software packages all have applets that can, in conjunction with inquiry-based approaches, foster student understanding and learning of concepts and skills. Such software, perhaps, changes what should be emphasized in mathematics courses and what should be deemphasized. What skills should be learned to automaticity, and what skills should be understood but be performed by mathematical software? Once again, we should be thinking about how such software and applets can best be integrated into our courses to improve student performance.

Whether we like it our not, we have entered into an instructional world with an amazing amount of fast developing technology (some old like TV clips, some new like smartphones). There is much to think about. Our students have ever-increasing access to these tools, and we as instructors are faced with many instructional tools, applets, and video clips whose appropriate and effective use have learning curves that we must climb if we are to serve our students well in this ever-changing electronic environment.

What's Happening at Santa Rosa Junior College

Dean Gooch

Santa Rosa Junior College's Mathematics Department is going through a huge amount of change. With more than fifty percent of the faculty aged over fifty, we have a lot of recent retirements and future retirements. Last year we lost both Ann Herbst and Jim Spencer to retirement, but fortunately, Jim and his husband, Quent, still enjoy hosting departmental parties. They definitely have the beautiful place for it.

This year, we are loosing Richard Werner and Rick Kavinoky to retirement as well. Rick Kavinoky is currently teaching a reduced load. Also, Rebecca Fouquette, sadly, left us this year for a job at De Anza College in order to work closer to home.

Last year we hired two new instructors.

Mark Ferguson comes to us from Chemeketa Community College in Salem, Oregon where he taught for twelve years. His Masters degree is in Mathematics is from Oregon State University.

Jennifer Carlin-Goldberg most recently taught at Foothill College. Jennifer has also taught at San Jose State University and UC Santa Cruz. Jennifer has her Ph.D. from UC Santa Cruz, Masters from San Francisco State University and got her Bachelors from Sonoma State University all in Mathematics. Jennifer also has the distinction of having taken linear algebra from me here at SRJC.

For the fall semester of 2011, we hired Ying Lin who had taught at Pima Community College in Arizona with some summer teaching at Mendocino College. Ying has a Masters and Ph.D. in Mathematics from UCLA and his Bachelor's degree is from Beijing University.

We have also had a population explosion among our department families as there have been three new babies born to faculty members.

Santa Rosa Junior College still continues to have a healthy but less funded MESA program. We support a tutorial center and a separate mathematics lab where students have access to computers and tutoring by instructors and student assistants. There is a possibility of expanding this facility.

Anna Brown has been instrumental in facilitating academic cooperation between the mathematics departments of Santa Rosa Junior College, Sonoma State University and local high schools as a leader and grants writer with the Cal-PASS program.

We have been using EAP test scores to assist in assessing our incoming high school students. Dan Munton got us started in this endeavor making Santa Rosa Junior College one of the first

pilot community colleges in the state. Dan along with Anna has also written grants to support

(see "Poster Session" on p. 18)

summer tutoring programs. These are designed to assist incoming students with better placement into mathematics courses after a refresher-tutoring program.

On the creative side, John Martin continues to

design award winning mathematics themed T-shirts and Richard Warner continues to create award winning sculptures that are also mathematically themed.

Santa Rosa Junior College just welcomed a new president, Dr. Frank Chong, in January of 2012. We are essentially in the getting-to-know-you period of our relationship with him. He seems very open and I expect that Dr. Chong will be a good fit for SRJC. Frank Chong is advocating that we seek alternative funding sources to supplement the budget at Santa Rosa Junior College.

Most importantly, the faculty members of the Mathematics Department at Santa Rosa Junior College continue to work collegially together. Although, we do not always agree, we strive for consensus and implement policies that allow each of us the academic freedom to perform our jobs appropriately within the high academic standards that we believe our students need. It is an honor and a pleasure to work here.

What's Happening at Las Positas College

Randy Taylor

In March 2004 when the economy was very good, the voters in our district passed a bond measure which has resulted in numerous construction projects at Las Positas College. First came a Multi-Disciplinary Building in 2007, followed by the Aquatics Center and new soccer filed in 2009. During the construction of these projects we were told that the cost of building materials had increased faster than anticipated so the last scheduled construction project would have to be cancelled because of a lack of funds. Yes, that last project was the new Mathematics building. In 2009 we added a new Maintenance and Operation Facility and solar panels in our parking lots. In 2010 the District Information Technology Building, the Barbara Fracisco

Mertes Center for the Arts, and the Child Development Center were all completed. In 2011 a new track and field was finished. In fall 2012 a new Science Building was completed and is now in use. The final construction project currently under way is the new Student Services and

Administration Building which is scheduled for completion in Spring 2013.

We were also fortunate in early 2008 to hire three outstanding new mathematics faculty members to join our department, just prior to the economy tanking. They are Howard Blumenfeld, Ruchira Majumdar, and Ashley McHale, all of whom just received tenure in July of this year.

After their hiring we had thirteen full-time faculty members in the Mathematics Department. Howard has been involved on our Distance Education Committee and has taken the lead on Hybrid Math class development. He has also been assisting with the AMATYC Student Math League and will become the moderator of the AMATYC Student Math League in a couple of years. Ruchira has served on the Basic Skills Committee and then the Curriculum Committee. This year she has also become a co-advisor to the Math Club and will take over as the main advisor within a year or two. Ashley McHale has served on the Curriculum Committee, then Basic Skills committee, and now the Academic Senate, plus she is the new Integrated Learning Center Coordinator. She is also the advisor for the Math Club and is transitioning into becoming one of the advisors for the Alpha Gamma Sigma Honor Society. Ashley received a 2012 District Chancellor's Award for her efforts in these areas. Howard, Ruchira, and Ashley are all involved in using either Pearson's MyMathLab or Advanced Instructional Systems' Webassign in their courses.

The rest of the math faculty has been busy too. Teri Henson was the Integrated Learning Center Coordinator for five years, served as Department Coordinator, was on the Academic Senate, and then stepped down to become Instructional Program Review Co-Chair. She received the Academic Senate's Outstanding Service Award for her excellent work on Program Review. She is now working on the college's Planning Task Force. Craig Kutil is the new Department Coordinator. He's served on the Academic Senate, has been responsible for department's SLOs, and is the advisor to the Chow-Hoon Goshin-Jitsu Club. Cynthia Keune is a mainstay in teaching Statistics. She piloted McGraw Hill's Connnectmath.com online system for Statistics and is working on improving the Hybrid Statistics courses. Bobby August has served on the Distance Education Committee and Staff Development Committee prior to doing a sabbatical at UC Davis, where he took graduate classes in the theater department to utilize performance skills/ techniques to enhance teaching. He has also created Statistics lectures on video for his classes. Jason Morris has served diligently on the College Enrollment Management Committee looking out for our department's interests. His is also one of our MATLAB experts and has development many MATLAB exercises for his Multivariable Calculus and Linear Algebra classes. Kristy Woods had been instrumental in converting our mastery learning self paced Math X program from book, paper, and pencil into one that now is interactive and uses MyMathLab. She received a 2010 District Chancellor's Award for this work. She also received a 2011 CMC^3 Teaching Excellence Award. Greg Daubenmire serves on the Staff Development Committee and has been active on the CMC^3 Board for the past 11 years, first a Adjunct Advocate and now as Secretary. Last year he ran for AMATYC West Region Vice

(see "Las Positas" on p. 10)

Through the History Glass

J. B. Thoo, Yuba College, jthoo@yccd.edu

[This is the first in a series on logarithms.]

Unlike today, when electronic calculators and computer programs are ubiquitous, I remember my days in school when I had to use a table of logarithms (and trigonometric functions, etcetera). Long gone are the days when logarithms and logarithm tables were used to facilitate multiplication, division, and the finding of roots. Instead, today one uses the logarithm *function* in mathematical modeling in a variety of areas, for example, in chemistry, seismology, psychology, and probability and statistics, as well as in finance, computer science, number theory, and music.

Two men are credited with inventing logarithms independently. They are John Napier (1550–1617), a Scottish baron, and Joost Bürgi (or Jost Bürgi; 1552–1632), a Swiss craftsman [3]. It is very remarkable that they did so without the advantage of the notation b^y for exponents, for today we usually introduce logarithms to students for the first time in intermediate algebra saying

$$y = \log_b x \quad \text{if and only if} \quad b^y = x.$$

This modern definition is very clean and leads many of us to pound into students' heads that *a logarithm is an exponent*. (The notation b^y for exponents is generally credited to René Descartes (1596–1560), who used it in his work *La géométrie* (*The Geometry*) in 1637.)

It appears that Bürgi had developed his idea for logarithms by 1558, but that his work was not published until 1620, and then only anonymously [5, pp. 13–14]. In the meantime, Napier published his work on logarithms in 1614 and, because of that, it is Napier's work, and not Bürgi's, that had a profound impact on mathematics; and it is Napier's

Figure 1: John Napier (left) and Joost Bürgi.

name, and not Bürgi's, that is now firmly attached to the conception of logarithms [5, pp. 11–14].

Bürgi used a table for $N = 10^8(1.0001)^L$, in which he lists values of $10L$ and N. In his table, the values of $10L$ were printed in red and the values of N were printed in black; consequently, Bürgi called the values of $10L$ *red numbers* and the values of N *black numbers* [3]. Napier, on the other hand, settled on a table that was essentially for $N = 10^7(0.9999999)^L$, in which he lists values of L that he at first calls "artificial numbers"; however, he later calls the values of L *logarithms* of the corresponding values of N.[1] He coined the term "logarithm," meaning "the number of the ratios" [2, p. 82], from the Greek words *logos* (ratio) and *arithmos* (number).

It is a common misconception that Napier invented the natural logarithm. In fact [4],

$$\text{Nap log}\, x = 10^7 \log_e\left(\frac{10^7}{x}\right) = 10^7 \log_{1/e}\left(\frac{x}{10^7}\right).$$

The choice of base 10 for the logarithm is substantially due to Henry Briggs (1561-1631), who was a professor of geometry at Gresham College, London. Thus, the base 10 or common logarithm is also called the *Briggsian logarithm*.

In the next installment we shall see how Napier defined the logarithm.

[1] Napier constructed three successive tables, the last being, Carslaw [2, p. 82] tells us, "a set of numbers lying between 10^7 and very nearly $\frac{1}{2}10^7$, and these numbers form a set dense enough to allow this Table to be used in dealing with the sines of angles from 90° to 30°." Carslaw explains the construction.

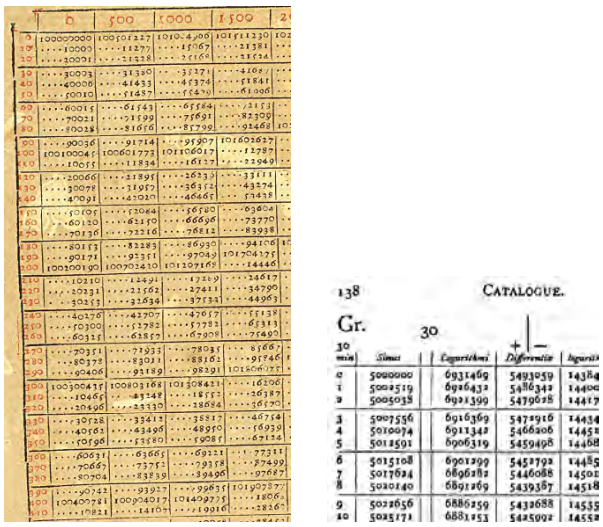


Figure 2: A portion of a page from Bürgi's logarithm table (left) and from Napier's logarithm table.

Previous columns are on the Web at <http://ms.yccd.edu/~jb2/histglass.html>.

References

[1] Florian Cajori, *A History of Mathematical Notation: Two Volumes Bound As One*, Dover Publications, Inc., New York (1993).

[2] H. S. Carslaw, "The discovery of logarithms by Napier," *Math. Gazette*, Vol. 8, No. 117, May 1915, pp. 76–84.

[3] Kathleen Clark and Clemency Montelle, "Logarithms: the early history of a familiar function," *Loci*, DOI: 10.4169/loci003495:1-11, Jun. 2010. <http://mathdl.maa.org/mathDL/46/?pa=content&sa=viewDocument&nodeId=3495>

[4] Howard Eves, *Great Moments in Mathematics Before 1650*, Dolciani Mathematical Expositions No. 5, The Mathematical Association of America, Washington, D.C. (1983).

[5] Eli Maor, *e: The Story of a Number*, Princeton University Press, Princeton (1994).

Las Positas College

(continued from p. 8)

President. Because of his involvement with CMC^3 and AMATYC, Greg received a 2011 District Chancellor's Award. Randy Taylor is on the college's Scholarship Committee, is the advisor to the Alpha Gamma Sigma Honor Society, the moderator the AMATYC Student Math League, and is a co-advisor to the Math Club. He received the 2011 CMC^3 Distinguish Service Award honoring his 18 years on the CMC^3 Board and the 2010 Alpha Gamma Sigma Honor Society Outstanding Advisor Award.

We have also had two recent retirements. Dale Boercker, long time faculty member first at Chabot College and then at Las Positas College retired in Spring 2011. Dale had been a former Department Coordinator and she founded our College Foundation Semester Program, a learning community for at-risk students. Upon retiring, Dale received the 2011 District Reed Buffington Award, the highest honor for a faculty member. In Summer 2012, Brenda Weak retired. Brenda was our Integrated Learning Center Coordinator, was active on the Academic Senate, and a member of the Faculty Hiring Prioritization Committee. We are now down two full-time faculty members, but aren't holding our breath that these open positions will be filled in the near future due to the budget crisis. We are all still active within the mathematics profession. This year Kristy, Teri, Ashley, Ruchira, Greg, and Randy along with part-time instructor Rina Santos will attend and serve as Presiders at the CMC^3 Conference. Additionally, part-time instructor Chuck Barnett was a speaker at the 2011 CMC^3 Conference. As a group we are gratefully for our beautiful campus, our great colleagues, and our enthusiastic students.

Handwriting on the wall: Videos for Math

Ken Bull, College of San Mateo

1. Bad scenes

Bull has to confess to some rather negative attitudes to "movies for math." Why does everything in the world have to be expressed as a video? What is so wrong with books? Lurking somewhere is the fear that reading and even literacy is being compromised. Are we perhaps contributing to a non-literate society by agreeing with what is obviously a widespread trend? Are we merely being carried along by our culture? Also, is it possible that some of the popularity of videos and podcasts is merely an expression of the desire of some instructors to be (even more of) a celebrity than they are with their own students?

Or are there ways that videos may be helpful in math teaching? Certainly the students (and even their parents!) have grown up in a world of TV and movies and internet. Using videos everywhere is understandable, even inevitable, it seems. Bad or good? Or, both?

In response to expressing the negative sentiments in the first paragraph, a friend mentioned Socrates was known to have doubts about the value of writing compared with oral communication. That sounded familiar, and the familiarity stemmed from having seen the argument many years ago, in a book still in the bookcase! It is in a paper by Jack Goody and Ian Watt entitled "The Consequences of Literacy."[2] It is actually Plato (through his spokesman Socrates) who questions the consequences of using writing rather than personal contact in education. Here is how Goody and Watt relate the argument:[3]

> What is at issue here is not only the intimate understanding which comes from long personal contact, but also the inherent advantages which living speech is given over the written word by virtue of its more immediate connection with the act of communication itself. The first advantage is by question and answer; whereas 'written words'. . .'seem to talk to you as though they were intelligent, but if you ask them anything about what they say, from a desire to be instructed, they go on telling you the same thing for ever.'

A second advantage that speech has (says Socrates, according to Goody and Watt) is that the speaker can vary his "type of speech" according to the needs of the listener. What is written may be rephrased to make sense to the reader; we know this experience from both classroom interaction and tutoring.

We as teachers will see in Socrates' description of learning the *tutoring* environment, or more accurately, the *discipling* environment. The discipling environment is the ideal for learning but it is expensive of resources, and we know that we can only approximate it. Goody and Watt point out that neither Plato nor "Socrates was an intransigent enemy of literate culture."[4] We know that education has found ways to combine the written word with the personal interaction of tutoring. A good part of face-to-face teaching and learning in small groups has to do with an exegesis of what text really means -- illuminating the text and clearing up possible confusions. On the face of it, videos for mathematics education offer life to dull collections of printed symbols and words, whose meaning takes time to decipher. But do

they? Notice that videos also suffer some of the same disadvantages as the written word; no matter how many times you rewind and replay, 'they go on telling you the same thing for ever.' Some video presentations do allow and invite feedback and questions (e.g. **www.khanacademy.org**) but that kind of communication is probably not convenient to the student.

So what of videos? How do they fit into mathematical learning? Do they really offer unique advantages? And if they do, how can they be used? Or, does the use of video resources detract from learning in some ways? Perhaps the answers to these questions depend upon the character of the resource. So, what is available?

2. Videos, videos everywhere: observations/ hypotheses and questions

A whirlwind tour of what is available for mathematics videos shows a huge diversity of materials, and what follows are some observations. The observations recorded here should be taken as "hypotheses" about the state of the video offerings for the math world; they remain to be tested by a more rigorous investigation. We restricted our observations to videos of lectures or problem solving. Some of the most interesting materials on-line are applets but they are excluded here.

First, with some over-simplification, we can say that there appear to be two kinds of presentations: "explanatory lectures" and "worked examples." This is overly simple in that some of the explanatory lectures also give worked examples, and a few of the worked example type of presentations do have something to say about why it is a solution works, and thus verge on being explanatory lectures.

On the "explanatory lecture" side, one extreme of videos is represented by the MIT courses (see http://www.youtube.com/user/MIT.) which appear to be made by setting a camera at the back of a vast lecture hall and letting the camera run. Hence, in this format, the video is the same length as a traditional lecture. However, unlike the MIT lectures, many explanatory lecture videos tend to be shorter, dispense with the students entirely and have the lecturer speaking to a camera, often with a fairly small white board, instead of MITs multiple blackboards. But the content and the delivery and the technology used appears to be the same even with no students; the lecturer is seen, and generally the lecturer is writing on the white board, just as in a traditional lecture. The next step is to dispense with the body of the lecturer, leaving only the voice of the lecturer (or possibly the arm and hand) so that the lecture has the relevant words and graphics appearing as needed, and accompanied by commentary. In this format (which is also very common for the worked examples) the writing may appear on the screen accompanied by a voice-over (with or without the hand doing the writing). We are calling this the "handwriting on the wall" format.[5] A further step is to dispense with the handwriting, and to present *printed* text or graphics at the opportune moments, so that what appears is a "talking book" perhaps somewhat more animated than simply reading a text, but only somewhat so.

One observation from the whirlwind tour: the dynamic and graphics potential of the video medium appear to be rarely exploited. Most of the expository lectures differ very little from either from traditional lectures or texts being read out loud. This watcher encountered some exceptions to this observation: one is the series found at http://www.youtube.com/user/calculusvideos?feature=results_main (there is a link there to the entire playlist) and there may well be others, but video lectures appear to be only dynamic in that there is movement of voice or humans. To make good graphics and especially graphics with animation takes time

and work, and goes much beyond simply making a video of already prepared lectures.

As lectures, are the lectures clear and well organized or not? As with "real life" lectures, there is great diversity in quality; some of them do a good job developing the material, and some do not. This watcher saw many with features that made him cringe, but others that were well done.

The "handwriting on the wall" format is more common with the worked exercises type of videos. (Question: for the total amount of resources -- perhaps measured in minutes -- which type, "expository lecture" or "worked example" is the more common?) As might be expected, these videos tend to be shorter, and vary in the amount of handwritten rather than printed or graphical material. They also vary in the extent to which the graphical material is hand-drawn, and the care that is taken in the graphics. Many of the worked examples are the sort of thing one would do on a bit of scrap paper while helping a student in a tutorial session. The worked examples videos are generally "student friendly" in the sense that they take the point of view of the student; they answer the question, "How am I going to solve this problem?" with sometimes helpful general hints, and a demeanor that generally puts the problem solver on the side of the student. Comments such as: "Here is the way I remember this thing. . ." or "Again, whatever you do on the left, you must do on the right. . ." are often found. Some worked example videos do not use handwriting at all but are completely printed or graphed; Larry Green's videos (see http://ltcconline.net/greenl/Courses/105/videos/VideoIndex.htm) are examples of this kind.

Three niggles concerning the worked examples. One annoying feature of many of the "handwriting on the wall" videos is that the presenter runs of out of space on the small board, and has to erase part of the solution. There does not appear to be a way to "scroll up" to see previous work, except by rewinding and replaying. Yet as a tutor helping someone, or as an instructor showing a problem in a class, we know that being able to revisit a previous part of the solution is often helpful.

A second niggle is that, typically, a "series" of worked example videos appear to be standardized in format -- often unnecessarily standardized; one series, for example, begins every video with exactly the same words: "OK, in this video . . . ." There may be a reason for this uniformity of presentation, but for this watcher the uniformity became boring very quickly.

Third niggle, and one that takes us to how the genre is to be used. The niggle has to do with the ending to worked examples. It is probably a good thing to state when the solution has been reached, and a common "ending" to these videos is to draw a rectangle around the solution and triumphantly announce something like ". . . we are done!" In a way, this announcement takes the point of view of many students ("Yea . . . we are done, . . . now to something interesting . . .") but it is not what the ending could be in a good tutoring situation. Depending upon the student, you might say: "OK, what was the sticky part of this problem -- the part that was hardest to understand?" or "Now that we have gone through this problem, try another one, which is similar, but not exactly the same . . ." or (for a better student) something like: "What would happen if the function were not continuous? Suppose we had a function with an asymptote here . . .?" Of course, by the nature of the video, we cannot have the variety of responses suggested here, but it is telling that the worked examples lacked reflection on what had been done, and never (Question: are there exceptions?) suggested a further problem. These endings probably reflect how the creators saw the videos being used, as examples of how to solve "this kind of problem."

A hypothesis: it appears that most of these worked examples videos dwell on what are sometimes called "template problems."

Insufficient data were collected to say whether this is true (Question: has someone done this?); nevertheless it seems a good hypothesis. Now template problems are important; if students cannot do template problems, then they will probably have even further difficulty tackling "non-template problems." It may be that "non-template problems" are those that require much more human interaction than can be put into a video presentation. In any case, a course made up with just worked examples, whether on-line or in paper form, would be a weak course, indeed. We are coming to the question of how video resources can be used in teaching.

3. Two models of video use: are there more?

Probably the dominant mode of video use in teaching is what may be called the "Library" mode, which uses video resources in the same way as resources in a library would be used. It says to the student: "Here are some resources that you may find useful," perhaps showing where the resources are found on-line. It is probably especially used by those using one of the commercial on-line homework programs. However, everything else about the teaching environment is the same; the videos are an "add-on." Questions: in this mode, do students actually use the resources? And if so, are they found helpful? Or not? Does the helpfulness depend upon the extent to which the resources are "pushed"? Does anyone know of any evidence in this regard?

An advantage of the Library mode is that it requires little extra work for the instructor, although I would think part of the instructors' responsibility would be to vet the resources, and warn against resources that could be misleading given the goals of the course as the instructors see them. (Example: this writer came across presentations that appeared to reinforce the common student idea that calculators are the fount of solutions.)

A second mode that suggests itself for using video resources is what is being called the "Reverse" or "Flipped" or "Backwards" classroom. The idea is that the classroom lecture and the homework are reversed, with the students watching the "lecture" at home, but doing the work perhaps together, and with the help of the instructor during class time.[6] This looks very attractive, in that it puts the active engaged part of the course in the presence of the instructor and other students, and relegates the passive part to home. After all, watching a lecture is more passive than reading text, especially, one would think, if it is a video rather than a live presentation. (Question: do most students regard and experience video or TV watching as a passive experience, and by extension, to mathematics lectures?). However, this proposal, as good as it sounds, raises questions; you will probably be able to think of other questions besides the ones raised here.

First off, there have to be a good source of "out-of-class" materials - a term deliberately chosen to suggest that the out-of-class materials may go beyond "lectures." Secondly, many instructors may want a means of seeing that these out-of-class resources are being used.

Let us take the second question first, since it is likely to be more easily answered, and raise fewer other interesting questions. How to track student use of the out-of-class materials? One can, of course, decide not to track at all. A second choice: some class management systems probably have a way of recording whether a student has logged on to the out-of-class materials; for some, this will sound rather too big-brother-ish, and in any case, students can open the link and not watch. A third option is to use very small quizzes on the salient points from the video material.

The first question about what materials to use for the out-of-class part of a backwards course is more intriguing. If the out-of-class

materials are lectures, are they to be the instructors' lectures, or lectures already produced? Can one simply "assign" the MIT lecture series or one of the other series, for example? Does one have to make one's own videos? Either option looks time-consuming, since even with an already created series, an instructor would want to know what is in the materials. Moreover, our whirlwind tour of videos available revealed that some of them more resemble talking books rather than lectures. So, one has to make a decision whether the "lecture" format, complete with lecturer and whiteboard (or blackboard and audience, as in the MIT case) is important, or whether something that looks something like a book can be used, except that it is read to the student, instead of being read by the student. This nearly brings us full circle. What if students actually read *textbooks* before attending class, and the class time were used answering questions about the text and expanding upon what is there? This looks very much like the "reverse" classroom. So, perhaps the new idea is not so new after all. Given that students have grown up in a world of video and movies, they are probably more likely to watch than read. Suppose a "text" to be read and referred to, included the dynamic graphical capabilities that appear to be rather lacking in many of the expository lecture format videos? Some texts do have links to applets, but the links are likely to be on a CD, or on a dedicated website, but these can also easily be linked using QRs as well.

The choices about out-of-class materials also force us to consider the value of lectures. Do students learn from clear, well-organized lectures, or do we keep on lecturing because we and the students believe that lecturing *is* teaching, and we and the students would think we were not doing our job if we did not do it?

One last thing: Students, and perhaps we, are fully caught up in the video and movie world. And yet we also value literacy; we value the translation of

(see "Videos for Math" on p. 17)

Should We Be Paying Attention to the Common Core State Standards?

Bruce Yoshiwara, Los Angeles Pierce College

California adopted the Common Core State Standards for mathematics in 2010. The math CCSS explain what mathematical knowledge and habits of mind are needed to be college or career ready. So far 45 states (and the city of Austin) have adopted the math CCSS. (46 states have adopted the English CCSS.)

I've had to read the math CCSS because I'm on the state committee tasked with aligning the CA math standards (a.k.a. Framework) with the math CCSS. But I'm hoping other community college math faculty are also looking carefully.

Although it is unlikely that the adoption of the CCSS will make remediation at community colleges obsolete, there are still reasons for community colleges to take interest in the CCSS. First, the traditional order in which we teach topics has been significantly altered. And second, the content for what is required in high school is also changed by the CCSS.

The CCSS assessments are promised for 2014. And presumably the results of those assessments will become high stakes measures of the effectiveness of teachers, programs, and schools. So (unless the California Department of Education reverses itself) we should expect not just a handful but essentially all California K-12 schools to be teaching to the CCSS soon.

The ninth grade math course will have students compare exponential and linear functions, but not study quadratics or other polynomials. The ninth-grader may also have practice with constructions and transformation in the plane and even given some simple geometric proofs. The tenth grade math course will include right triangle

(see "Common Core" on p. 19)

CMC³ Foundation Report

Debbie Van Sickle, Foundation President, Sacramento City College

Scholarships

Last spring the CMC³ Foundation awarded a total of $7,200 in scholarships to students attending 18 of our member colleges. The names of the students, chosen by the faculty at each college based on guidelines we provided, can be found in the summer edition of the CMC³ newsletter at http://www.cmc3.org/Newsletters/CMC3Summer12Newsletter.pdf. Since the publication of the newsletter, we have awarded one additional $400 scholarship to Yuan Zhuang at De Anza College.

Congratulations to three students from West Valley College who won CMC³ scholarships for earning the highest scores among our member college students in the annual AMATYC Student Mathematics League 2011/2012 competition. Julia Huang, who placed first in the national competition, was awarded $100. Dennis Cui and Keegan Mendonca, who tied for third place in the national competition, were awarded $50 each. West Valley also placed first in the national team competition. Julia, Dennis, Keegan and the other members of the West Valley team were awarded AMATYC prizes as well. Go to http://www.amatyc.org/SML/index.htm for more information on the competition.

In the spring of 2013 we will begin sending out information to the college representatives of the CMC³ member colleges slated to receive awards in June of 2013. Please go to our website at http://www.cmc3.org/foundation.html or email me at vansicd@scc.losrios.edu for more information.

The CMC³ Foundation also awards a $500 scholarship for the Student Speaker Competition during the CMC³ Spring Conference at Lake Tahoe. Debra Landre, a former CMC³ President, has sponsored this scholarship for the last several years. Applications are open to any currently enrolled community college student in our region. More information about this competition will be available in Spring 2013.

Fundraising

CMC³ scholarships are only made possible because of the generosity of our members, our vendors and other contributors. Everyone who is a member of CMC³ is also a member of the Foundation. You can help us in several ways:

- Make a tax-deductible cash contribution*.
- Donate prizes for our raffle and/or silent auction. The value of these items is also tax-deductible.
- Help us get donations raffle or auction prizes from businesses or individuals.
- Purchase lots of tickets for our raffle.
- Bid on items in our silent auction.

This year for the first time we will have a silent auction in addition to our raffle. We would like your donations of new items or services of almost any value. The following are some examples:

- A weekend at a timeshare or cabin
- Transferable airline vouchers or other vacation-related items
- Gift cards for stores, restaurants, or services
- New gift baskets (store bought or homemade)
- Items we can add to other gift baskets
- The new afghan your grandmother made for you

Silent auction items do not need to appeal to everyone, so a gift certificate for a restaurant or service near you would be fine.

I would like to thank everyone who made generous donations of money and prizes over the last year. Without your support none of our work would have been possible. I would also like to thank the other members of the Foundation board: Rebecca Fouquette, Barbara Illowsky, Bic Ha Dovan, and Hsiao Wang.

*CMC^3 Foundation is a nonprofit charitable organization under section 501(c)3 of the Internal Revenue Code. Contributions are tax deductible to the extent allowable under federal law (as long as no goods or services are provided in exchange for the donation). Our Tax Identification Number is 94-3227552. Cash donations can be made in three ways:

- At the time you register for either conference (There is a box to check on the registration form. Please use a separate check, but mail it in the same envelope as your registration form.)
- In person at one of our conferences
- By mailing a check to our treasurer Rebecca Fouquette at 4298 Brentwood Circle, Concord, CA 94521

Email me at vansicd@scc.losrios.edu for more information.

Videos for Math

(continued from p. 15)

written material into mathematics, even though at all levels, it is one of the most difficult things for students (think word problems all the way from elementary algebra to differential equations). We also value (perhaps less so) writing about mathematics.[7] Using video resources in any way means that the non-video, or written aspect of the course also has to be strengthened, if reading, translating and writing using mathematics is to be honored.

Bull confesses negative attitudes towards videos. Having looked briefly at what is available, Bull is also unrepentant.

Monterey 2012 Conference

(continued from p. 3)

Exhibit Hall, often with snacks and beverages provided by our generous sponsors.

Saturday Sessions from 9 am to 5 pm will cover a great variety of topics from Basic Mathematics to Calculus and Statistics. Full details are available at http://www.cmc3.org/conference/Monterey12/MiniProgram_2012.htm .

Until our block of rooms is sold out, Hotel Reservations can be made for $135 per night at https://resweb.passkey.com/go/camath2012 .

Thanks to all of you for supporting CMC^3 these last 40 years. I'll see you in Monterey on Dec. 7 and 8, 2012.

Poster Session

(continued from p. 3)

of their project ahead of time. Winners will be announced during the post lunch session.

Any interested students should complete an abstract, which will be handed out to conference attendees, and submission form available now on our website www.cmc3.org. Submissions will be accepted until November 18, 2012.

We are also looking for volunteers from our membership to help judge these posters. You will be asked to judge each poster ranking them, on a scale from 1 to 5, in each of the above mentioned areas. Judging will take place during one of the morning sessions.

If you are willing to volunteer to be a judge or have any other questions, please contact me at fouquetterebecca@fhda.edu.

City College of San Francisco and Accreditation

Katia Fuchs, City College of San Francisco

The last several months have been difficult ones at City College. In July of 2012 the College received word of its accreditation status, and that it had been put on "Show Cause". The college has been asked to submit a "Show Cause" report by March 15, 2013, in which it shows plans and substantial steps to improve in the areas as indicated by the accreditation commission. The college is required to submit a Special Report by October 15, 2012 as to its progress so far.

Shortly before this time, Chancellor Don Griffin retired from City College due to health concerns, and was replaced by Interim Chancellor Pamila Fisher. She will remain at the head of the College through October, 2012.

Fourteen work groups have been organized, one to target each of the Accreditation Commission's recommendations, and the College has been working in a unified fashion to address the concerns of the Commission as thoroughly as possible. The Board of Trustees has requested the appointment of a Special Trustee by the state.

Among concerns presented by the Commission were fiscal concerns. Since City College is one of the few colleges in the State of California that approaches the appropriate ratio of classes taught by Full time Instructors, the Full time faculty body is a very large one. City College also offers full benefits to Part Time employees (both faculty and staff) who work a half load. City College also guarantees a continuation of health benefits to retired employees. These present vast financial challenges, and plans need to be implemented to address these concerns. A state sponsored Fiscal Crisis Management Assistance Team, invited by the City College Board of Trustees has recommended that the College reduce Full Time Faculty by attrition, and negotiate a change in the Part Time Faculty health care coverage.

Another concern presented by the Commission regarded Student Learning Outcomes. Departments have been charged with ensuring that all of their courses have SLO's available, and that they are being assessed. The Mathematics department is happy to say that a cycle of continuous quality improvement is in place for all of our courses. This semester committees have been assigned to assess SLO's in ten classes. Assessments will vary from course to course, but most are centered around common final exam questions designed by the committees to address particular learning outcomes. We are also in the process of developing program learning outcomes.

Through all this City College remains dedicated to its students. Classes are in session, and faculty are working hard as always to bring the kind of quality education to its students that City College is known for.

Common Core

(continued from p. 15)

trigonometry and probability, and the eleventh grade course will include analytic trig for modeling periodic behavior and inferential statistics.

Where will our placement tests put these students in our current developmental math sequence?

The Student Success Task Force recommends that community colleges should align its courses with the K-12 curriculum. Do we try to make our developmental math program include all topics and skills that the CCSS say are needed to be college ready, or do we include only what math is required to succeed in a transfer math class?

If we choose the latter, are we putting our transfer students at a disadvantage compared with the students who will be entering the universities directly from high school having mastered the math CCSS?

The main website of the math CCSS is http://www.corestandards.org/the-standards/mathematics/. There are other resources at the Illustrative Mathematics site: http://illustrativemathematics.org/.

Math Nerd Musings

Jay Lehmann, College of San Mateo

There is a large variance in students' mathematical ability in our classes and our calculus students are no different. On the one hand, there are plenty of students who scraped by with a C in precalc and are desperately trying to grasp the concept of a limit while striving to shore up their deficiencies in algebra. On the other hand, there are students (often foreign) who have succeeded at the first two semesters of calculus and are retaking first semester calc.

We've all come up with various ways to address this variance in ability. For lectures, I try to work in occasional examples that are quite challenging. This semester I made the offer that any A student could opt for skipping all the easy homework exercises and instead do a good chunk of challenging problems.

But the tactic I'm most pleased with is what I've done with exams. On each test I include one challenging problem, something that hopefully will make even my strongest students sweat, in a good way. This accomplishes several things.

First, it increases the likelihood even my strongest students might learn something on an exam. It would be a shame for that hour to go to waste. Expecting students to think creatively on an exam is a high expectation, but students can make some pretty cool connections, provided you don't cram too many problems on the test. I find eight problems works well. I can tell I've got the length right, because most students finish early or are more than willing to turn in their exam after the hour's up.

Another advantage of including a challenging test question is that students work harder on the homework. It doesn't take them long to figure out that the zinger questions on exams have more in common with the tough homework exercises than the

easy ones. Office visits now tend to consist of students asking me about the tough problems in the homework. To further motivate students to fully complete homework assignments, I no longer grade proportionally to the number of problems completed. Instead, I dole out points that reflect how well I think a student will do in the course. For example, if a student completes 80% of the homework, they might get only 50% of the homework points, because let's face it, a calculus student who's not doing all the homework has little chance of passing the course, and I don't want their homework score in any way to carry them.

Yet another perk of including challenging problems on exams is more psychological in nature. I find that calculus students are more likely to research prospective instructors than algebra students. In part due to my style of exams, I believe students tend to think of me as a tough but accessible instructor. And that's exactly the reputation I want to float about campus, because that will attract hardworking students in subsequent semesters.

Any time enthusiasm and learning cross paths, something good is definitely going on.

Next, I'll share with you some recent challenging problems I've used on exams, but first a caveat: a problem can be easy or hard, depending on what you've lectured on and what you've assigned in homework. For example, on my last exam, I included the following problem: Use limits to find the derivative of $f(x) = \sqrt[3]{x}$. Okay, not an amazing problem. But, nonetheless, this problem falls in the challenging category, because I never did an example nor assigned a homework problem like it. You might think any student with a solid precalc background could ace this problem, but my gut told me it would flatten my class. So, I even provided the following hint: Use the difference of cubes formula:

$$A^3 - B^3 = (A - B)(A^2 + AB + B^2)$$

Too heavy-handed of a hint? Apparently not. Only five of forty-two students did the problem successfully. And that's about the success rate I'm looking for on my zinger questions. I realize it's a self-fulfilling prophecy to some degree, but it's my sense that there's usually about five students who are well ahead of the pack.

I don't want to limit my As to students who can do such problems. There's something to be said for students who are ultra-prepared and can do extremely well on problems that are fairly similar to problems in the homework. To give such students an opportunity to get an A, I assign points to problems an exam so the zinger question is worth about 6% of the exam. That way, a student can wrack up a 94% if they do perfect work on the remaining problems. That might sound like a tall order, but an additional four students managed to get at least a 90% without succeeding at the challenging question on my last exam.

So in addition to a problem being unfamiliar, what makes for a good challenging question? One thing I like about having students find the derivative of $f(x) = \sqrt[3]{x}$ is that using the difference of cubes formula is a generalization of using the difference of squares formula to use limits to find the derivative of $f(x) = \sqrt{x}$. A curious, passionate math student might even leave the exam wondering if a similar approach might work to differentiate $f(x) = \sqrt[4]{x}$. Some of my best mathematical insights happened while walking back to my dorm room after taking a particularly tough math test.

Another type of good problem is one that requires students to combine concepts in new ways. Here's such an example, taken from Stewart's *Single Variable Calculus Early Transcendentals*, 7 ed. (Exercise 74 in Section 3.1): Find a value of c such that the line $y = c\sqrt{x}$ is tangent to the curve $y = \frac{3}{2}x + 6$. Had I done a similar problem in class, this would hardly make for a challenging question, but the closest I'd gotten was demonstrating how to find the equation of a tangent line of a function at a point.

Yet another type of challenging question is to have students go backwards. You've shown them how to graph the derivative using the graph of a function? Have them graph a function using the graph of its derivative. You know the drill.

One of my favorite aspects of zinger questions is that they're fun. Since such a problem is worth only 6% of the test points, I can pretty much risk asking as creative a problem that I want. After all, if no one does the problem, I can always throw it out, although this has never happened. It's a kick to throw some tough problem on exams and see who can handle it. And students enjoy these problems too, at least those who pull off doing them. But the interesting thing is, even students who are unable to do such problems seem to be engaged with sorting out the solution even after they've turned in the exam, which is the ideal, in my opinion. There's little I enjoy more than seeing a clump of students having an animated discussion in the hallway just outside of our classroom about the latest zinger question.

If you don't listen closely to the words, you'd think they were amped about the latest version of the iPhone or some video game due out. This is good stuff. Any time enthusiasm and learning cross paths, something good is definitely going on.

Calendar

October 6, 2012 CMC³-South Mini Conference, Los Angeles Mission College, Los Angeles, CA. Contact: Debby Wong, (818) 364-7887, email: wongd@lamission.edu

November 8-11, 2012 AMATYC 38th Annual Conference, Jacksonville, FL. Contact: AMATYC Office, (901) 383-4643, email: amatyc@amatyc.org

December 7-8, 2012 CMC³ 40th Annual Conference, Portola Hotel and Spa, Monterey, CA. Contact: Mark Harbison, (916) 475-9461, email: harbism@scc.losrios.edu

January 9-12, 2013 MAA-AMS Joint National Meeting, San Diego, CA. Contact: MAA Office (202) 387-5200, email: maahq@ma.org

February 23, 2013 MAA Northern California Section Meeting, University of Pacific, Stockton, CA. Contact: Edward Keppelmann (775) 784-4445, email: keppelma@unr.edu or Brad Chin (408)-741-2189, email bard.chin@westvalley.edu

March 1-2, 2013 CMC³-South 28th Annual Conference, DoubleTree Hotel, Orange, CA. Contact: Art Nitta, (909) 274-5386, email: anitta42@gmail.com

March 15-18, 2013 Teachers Teaching with Technology, Philadelphia, PA. Contact: Renee Hartshorn, (888) 282-8233, email: rhartshorn@ti.com

March 21-24, 2013, 25th Annual International Conference on Technology in Collegiate Mathematics (ICTCM), Boston, MA. Contact: Joanne Foster (800) 472-6288 or (207) 676-8688, email: joanne.foster@pearson.com

April 2-7, 2013 7th International Conference of Mathematics Education and Society (MES 7), Cape Manor Hotel in Sea Point, Cape Town, South Africa. Contact: Kate le Roux , email kate.leroux@uct.ac.za

April 17-20, 2013 NCTM 91st Annual Meeting, Denver, CO. Contact: NCTM Office (703) 620-9840, email: annlmtg@nctm.org

April 26-27, 2013 CMC³ 17th Annual Recreational Math Conference, MontBleu Resort Casino and Spa, South Lake Tahoe, NV. Contact: Mike Eurgubian, (707) 778-2474, email: meurgubian@santarosa.edu

June 13-14, 2013, AMATYC Southwest Regional Conference, Coconino Community College, Flagstaff, AZ. Contact: Ana Jiménez, (520) 206-7667, email: ajimenez@pima.edu

June 17-20, 2013, 7th Annual International Conference on Mathematics Education and Statistics Education, Athens, Greece. Contact: Gregory T. Papanikos, email: atiner@atiner.gr

Jay Lehmann
Editor
CMC³ Newsletter
c/0 College of San Mateo
1700 W. Hillsdale Blvd.
San Mateo, CA 94402
MathnerdJay@aol.com