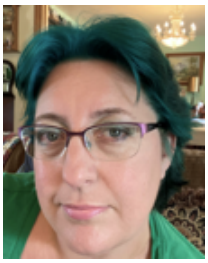
California Mathematics Council Community Colleges

President's Report

Jen Carlin-Goldberg, Santa Rosa Junior College



In March of 2020, while some of our schools were on Spring Break, we were ordered to convert all of our classes to remote learning. We were forced to do something that many, I may even say most, of us were not prepared to do. CMC³ had to make the very difficult decision to cancel the Spring conference, made easier by the fact the Lake Tahoe Community College canceled it for us due to restrictions on large gatherings. We hoped that the COVID-19 pandemic would not last long, some of us entertained the hope that we could still hold out spring term's finals in person. Then one by one, we shut down face-to-face classes for the rest of the term, then for summer and for fall. In a meeting early in the summer, **the Board of CMC³ decided, again a very difficult decision, to cancel the in-person fall conference in Monterey.** Despite the joy and connection it brings all of us, we felt that it was the only responsible thing to do. Our venue, the Hyatt hotel was very gracious and made it painless for us to cancel. **I hope you can take the time to read President-Elect James Sullivan's article about us *possibly* hosting an online conference (on December 11 and 12).**

This summer, I find myself speaking into what I can only imagine is an infinitely large room at students who I usually cannot see, telling my off-the-cuff, dad-style jokes and hearing no laughter in response. The energy that I use to enliven my classroom is no longer reflected back at me by my students, so I feel myself pour more energy in that infinite room, feeling a little bit of my soul get sucked away as well. I find myself, on occasion, fixing my eyes on the one student with their camera on to gauge their comprehension of what I am teaching or to see if my usual classroom humor still lands. I miss being in the classroom with them. It's not just that I am doing twice the amount of work with these online classes than I had to do with face-to-face classes. I miss the community that I build in that classroom, where students help each other learn. I miss being able to look upon them and know when what I was saying at that moment was not clicking correctly in their brains. You all know what I'm talking about.

I miss casually visiting with my colleagues every day and cheerfully shouting

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Pencil in Your Calendar:

48th Annual CMC³ Conference May Be Online or Cancelled (more info to come via next issue of newsletter, website, and possibly e-mail).

December 11th and 12th, 2020

Volume 49, Number 2 Summer 2020

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President's Report

(from page 1)

hello to them as they enter the building. (How lucky I was to get an office with a perfect view of the entrance!)

I am glad we are distance learning in the Fall. Perhaps glad is not the correct way to put it; I can live with it, literally. It was a relief when the Santa Rosa Junior College decided that the Summer and Fall terms were going to be entirely distance learning. I wouldn't have to prepare for every possible scenario, and I could focus on doing my best in my online classes. I can work all summer to prepare assessments, online homework, and work on how I'm going to deliver my class content. I can make a plan. Having a plan feels like having some control.

This plan does not come without its drawbacks of course. When we went online last Spring I lost a lot of students, as I am sure many of you did as well. Students that I would have guessed would have gotten an A in my class and students who were working hard to achieve their educational goals were suddenly gone, some without a word. The lockdown and move to remote learning disproportionately affected our underrepresented students. The great "digital divide" that our Governor speaks of often made it harder for our Black, Indigenous, and Latinx students to keep up with or even access their courses once they moved to remote learning. My single-mother students all disappeared, as well. I reflect on their stalled or derailed lives; I can only hope that those students can return when the pandemic subsides enough to allow us back into the classroom.

Despite everything that our institutions and our state have done to accommodate our students' needs, I know that we will not be able to keep them all and many of the students that we lose are the very students that need community college education the most—the students that need the education that we provide to build themselves a better life. This summer, a student of mine in Zoom got up during her exam to answer the door. Her movement caught my eye and I watched her landlord hand her an eviction notice. She took a moment before getting back to her exam and then another moment to explain what happened. What a thing to face while trying so hard to succeed!

While we are trying to teach online, there are those of us who have kids and grandkids still in school, many of them will also be distance learning starting this fall. My twins are going into first grade and my eldest into second. They all love school, but distance learning those last few months of last year was no picnic for them either. I am lucky that I have some support in my house, but I know that a lot of us do not. I know that this is the right choice for our communities. I have heard of the studies looking at the different school closure decisions made during the Spanish Flu pandemic and how those different decisions affected infection and death rates in their communities and how the research shows that opening schools was likely the cause of the second wave of the H1N1 in Alberta, Canada back in 2009. (My source is "This Podcast Will Kill You" Episode COVID-19 Chapter 10: Schools: https://pca.st/azouwmo6. It was fascinating.) It is maybe the right choice, but it is hard on all of us, faculty, students, and staff alike.

The COVID-19 pandemic and the need to convert our classes to online also allows us to take a cold, hard look at our institutions, our government, and our world. We have problems that we need to face head on with all the open mindedness and enthusiasm for learning that educators can bring. The Black Lives Matter movement is long overdue and now many of us are facing our own institutions' problems around systemic racism. We need to confront equity gaps and systemic racism in our colleges, listen to our students and faculty of color, and make changes, including in ourselves. We know as educators that there is always more to learn. I learned that a friend and colleague of mine had the police called on him as a

suspicious person when he entered his building, where he teaches class! To coin a phrase I have often seen in my social media feeds; he was entering a building while black.

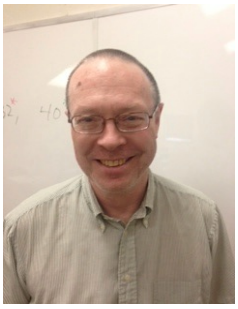
In facing these problems, we can learn how to be better educators. We want education to be inclusive. I have always said that we cannot find the best solutions to our problems without everyone there at the table sharing their knowledge and experience. To that end, I will listen better, and I will stand and defend every person, faculty, student, or staff who doesn't feel like they are valued in our educational institutions. I see you and I value everything that you bring to our colleges and our lives. On the CMC^3 homepage, http://www.cmc3.org/, and included with the CMC^3 mission statement, we have posted our anti-racism and equity statement. Let us not let the fire that has been lit in our society die down; let it power the engine that will lead us to real change.

Back here, still at home, my response to this whole mess has been typically me; I cut off my waist-length hair and dyed it teal, I'm not sleeping well, my succulent garden has never been so well cared for, and we built an above-ground wooden bunker in the backyard that the kids seem to think is their playhouse. I find ways to laugh and enjoy my kids. And I sit in front of a computer. A lot.

My heart swells with pride for all of you, my fellow educators, and our students, who are going through many of the same things that I have and much that I have not. You are keeping this impossible ship afloat, getting as many students the education that they desire and deserve. You are a credit to your profession, and I am proud to count myself among you.

The Pleasures of Problems

Kevin Olwell, San Joaquin Delta



Summer 2020: The floor function, $\lfloor x \rfloor$, is the largest integer $\leq x$. For example $\lfloor \pi \rfloor = 3$. Let m and n be positive integers with no common factor. Find a formula for the following expression:

$$\left\lfloor \frac{m}{n} \right\rfloor + \left\lfloor \frac{2m}{n} \right\rfloor + \cdots + \left\lfloor \frac{(n-1)m}{n} \right\rfloor.$$

Spring 2020: Define a sequence of polynomials recursively by

$$P_n(x) = P_{n-1}(x - n),$$

where $P_0(x) = x^3 + 313x^2 - 77x - 8$. What is the coefficient of x in $P_{20}(x)$?

Thanks to Joel Siegel, Fred Teti, Mel Hom, Chris Burditt and Chuck Barnett for submitting a solution.

Since $P_n(x)$ shifts the roots of $P_{n-1}(x)$ by n, the cumulative effect is to shift the roots of $P_0(x)$ by $1 + 2 + \cdots + 20 = 210$. Consequently $P_{20}(x) = P_0(x - 210)$:

$$(x - 210)^3 + 313(x - 210)^2 - 77(x - 210) - 8$$

The Binomial Theorem provides the coefficient of x in each term:

$$3 \cdot 210^2 + 313(-2 \cdot 210) - 77 = 763.$$

Alternatively the coefficient of x is $P'_{20}(0)$.

All are invited to submit a solution to the Summer 2020 problem via email at the address below:

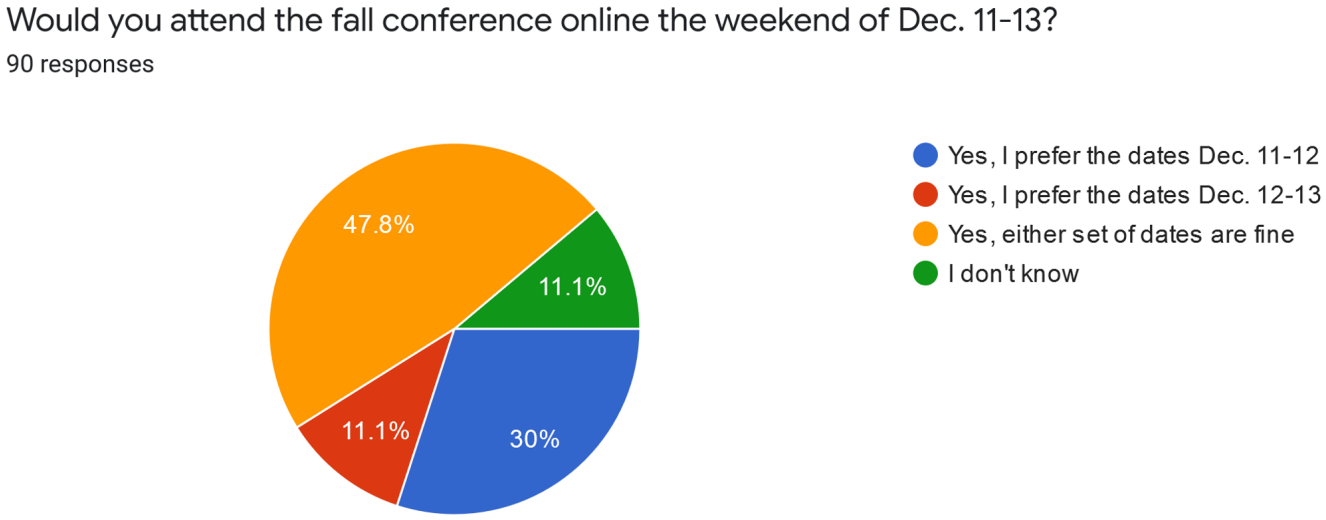
kevin.olwell@icloud.com

CMC³ Fall Mathematics Conference Report

James Sullivan, President-Elect/Fall Conference Chair, Sierra College

In light of the COVID-19 pandemic, the Board of CMC³ made the decision to not hold our December Conference in person this year. This decision was difficult, and we took into serious consideration the California Department of Public Health State Order and Guidelines as well as the health and safety of our membership, their families, the communities the attendees would return home to, and the wonderful staff at the hotel where the event is usually held.

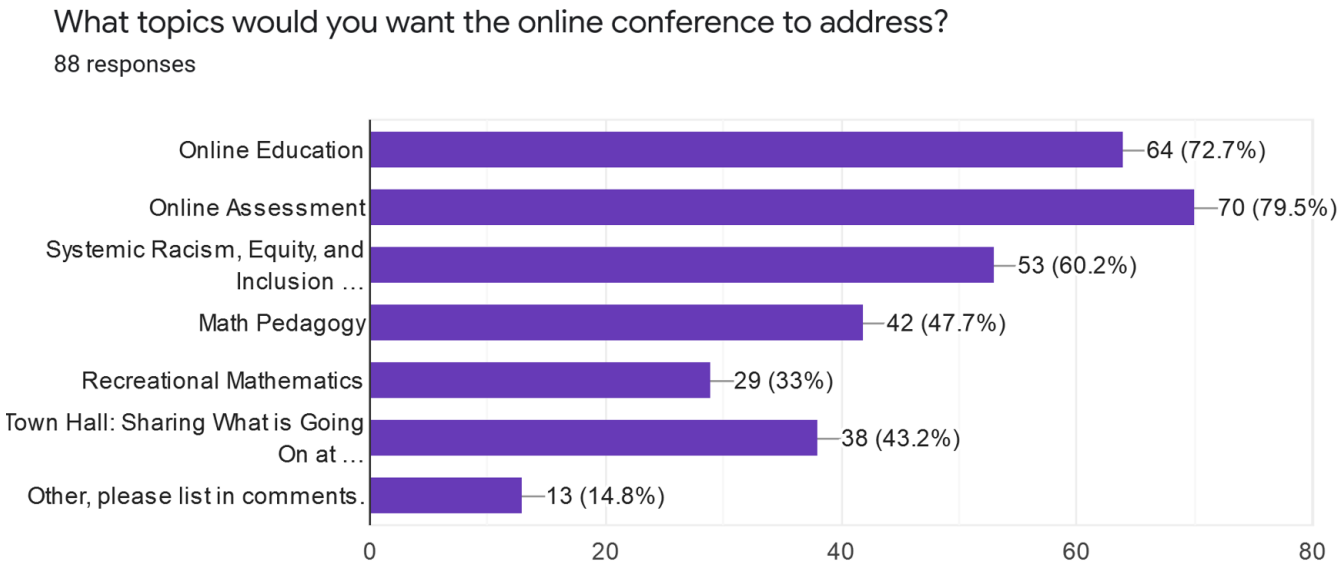
We sent out a survey for members to see whether there was any interest in moving the conference to a virtual format, and got ninety responses! For summertime, we are quite impressed and grateful for your participation. From the survey, we can see that, of the people who have a preference, most would ask that we hold the conference during its normally slated time, December 11 and 12, 2020. **In light of your feedback, we are *considering* hosting an online conference (on December 11 and 12).**



The Conference Committee is working hard to determine the best plan for how to hold the conference. We are researching platforms that both look good and will be easy for our conference attendees and speakers to use. We understand that after holding all of our fall classes online, spending nine hours sitting in front of a computer in an online conference wouldn't appeal to many of us. So, we are exploring various alternative schedules that will keep things interesting, dynamic, and informative. We won't have our breakfast buffet and coffee carts this year to allow us to socialize and network with each other. So, we are exploring activities and other ways to keep the conference engaging and fun.

We are very excited that the keynote speakers we had scheduled for the conference in Monterey have agreed to deliver their talk in a virtual setting. Our Friday night Keynote speaker Professor Jessica Bernards of Portland Community College has been teaching mathematics since 2005. She has taught a wide range of mathematics courses from developmental math up through calculus, both on campus and online, and has created curriculum for all of these levels. Additionally, Jessica is a member of AMATYC's Project

ACCCESS Cohort 9 where she developed a Math Study Skills Program which is now used across the nation. In 2017, she was the recipient of the Leila and Simon Peskoff AMATYC Award for her work with Project ACCCESS. The title of Professor Bernard's talk is "Grit and Growth Mindset: The Foundations for Success in Mathematics".



If you are interested in being a speaker at this fall's virtual conference, please go to the Fall Conference webpage on the CMC³ website and submit a proposal! We are especially interested in receiving proposals that present effective online assessment practices. If you were satisfied with the online assessments you implemented last semester, but don't feel you can give an entire presentation on the topic, we still want to hear from you. We would like to be able to offer a panel discussion on online assessment practices where faculty can share their experiences with their colleagues.

In the meanwhile, we have compiled a collection of resources on both online learning and equitable teaching practices, which you can find on pages 11 and 12 in this newsletter.

As always, I thank you for your continued support of CMC³, and I along with the Board of CMC³ remain committed to serving and supporting Northern California Community College Math Faculty.

Math Nerd Musings: Synchronous Online Instruction and Assessment

Jay Lehmann, Editor, College of San Mateo

OMG, the transition to teaching remotely was insane! In a four-day window, my colleagues and I had to scramble to learn various features of Canvas and Zoom, as well as come up with a game plan for how to use such tools most effectively.

Most of my math colleagues opted to teach synchronously. We continued to meet bimonthly for our community-of-practice meetings, and almost all of us reported in with the same experience: That amazingly, our experience synchronously online was very close to teaching face-to-face. Attendance was strong, students were participating well, and students were performing as well as when we were teaching face-to-face. And in some ways, teaching synchronously online was even better than face-to-face. For example, almost all students were arriving early or on time! Other benefits are that every student has a front seat and there are easy ways to poll students.

> I believe we have stumbled upon a form of remote instruction that can be used with great success beyond sheltering.

There have been two challenges: facilitating group work and assessment.

Although Zoom's breakout-room feature is an efficient way to randomly assign students to groups, students are more likely to go off-task because professors/embedded tutors can't view all groups at once. One faculty member has addressed this issue by using only three groups so that she and her two embedded tutors can view all the groups. I have continued to use two-student groups and find that they stay on task for shorter activities. So, rather than assign a worksheet with many problems, I tend to assign just one meaty problem at a time.

Another issue with group work is that students tend to work independently in breakout rooms. My plan for the fall is to give students talking points they should address during the problem solving. For optimization problems, I might have them (1) discuss an overall game plan, (2) discuss the validity of their objective and constraint equations once found, and (3) deeper into the problem-solving, discuss whether it would be more efficient to perform a sign analysis of the derivative or use the second derivative test.

For assessment, I have found a simple tactic that works quite well, although it's not perfect (no tactic is). At the start of the test, I have students print the test. If they don't have a printer, then they copy the test questions onto paper. (I allow time for this.) Then students sit far enough away from their camera so that I can see both their eyes and hands. This way, I can see if they reach for phones or keyboards. Eyes not trained on test papers for sustained periods is a red flag. If I notice any suspicious behavior, I address it via private chat. I find these deterrents work for at least 95% of my students. I can tell this percentage is valid because students are making errors that suggest they are not referring to technology, notes, and other's papers.

Our Academic Senate has expressed concerns about accessibility when teaching synchronously, but faculty record and post

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Math Class in the Time of COVID-19

Hal Huntsman, Antelope Valley College

I have worked hard to become the best face-to-face math teacher I can be. The more I've learned about learning, the more I understand that students learn best when they are actively engaged with the material and thinking, not watching and listening. So, I lecture less and less and, instead, work to create an engaged, student-centered classroom.

For example, for the first half of the spring 2020 semester my precalculus students were at the boards all around the room every day, for much of class time. I focused on helping students gain conceptual understanding by asking more questions aimed at developing that understanding. I tried to foster more independent thinking: when students asked, "is this right?" I usually asked the rest of their group what they thought; I asked them how they could check their answer or what we could do to convince them that they are right. I also consistently gave affirmations about process and progress in class, praising good work even when the final "answer" wasn't always correct. Together we were building a community of learners that collaborated and helped each other, and I was proud of the work we were doing.

Then came the COVID-19 crisis, disrupting almost every aspect of our lives and work. This was not working from home. This was living in the midst of an emergency, during which we were trying to teach our classes and support our students remotely.

Faced with the daunting task of moving entirely online, with relatively little time to prepare, I found myself defaulting toward lecturing and the teaching of procedures. It's easy to understand my tendency. My mathematical education was almost entirely by lectures that emphasized procedural fluency. That's the way I was taught, so I fall back on that when I'm in a pinch.

Knowing our own fall-back teaching strategy—not just in the middle of a pandemic, but any time we are stressed for time or under some other pressure—is an important part of a teacher's self-awareness. Recognition is the first step to responding in a better way.

When I saw where I was going, I stopped and asked myself some questions about my goals for the class and for my students. But I quickly came to see that other questions were more important in that moment: What are reasonable expectations for my students in a context none of us could have anticipated? How can I help them be prepared for the next steps in their educational journey in the most humane and compassionate ways? What policies and procedures are going to be most fair, given the extraordinary circumstances? If I were a student right now, how would I want my teachers to treat me?

I still wanted my students and I to be part of a community. I still wanted my students to develop conceptual understanding, intellectual independence, confidence, and the ability to collaborate. Moreover, I still had a professional obligation to accomplish those goals, but they had to be seen through the new and all-encompassing lens of COVID-19. How could I achieve those goals in this new context?

These reflections led me to the following practices in my now-online course.

To keep a focus on conceptual understanding, in live Zoom meetings I asked students some "always/sometimes/never" questions (e.g., "Always/sometimes/never? The y-coordinate of a parabola's vertex is the minimum value for the range of the function."). I also added more conceptual, writing assignments to the course in Canvas, using the discussion feature, and in assessments. This included prompts that asked students to describe the process of solving a problem.

To promote more student independence, I limited myself to no more than 10 minutes for videos on class topics, and in optional Zoom class "meetings" I restricted my lecture time to about 20 minutes, reserving the rest of the time for students to ask questions and work on problems in breakout rooms, which also fostered collaboration. In addition, I worked to connect students to each other whenever possible.

Most of all, I tried to remember that on the other end of those emails and Canvas messages and Zoom meetings there were humans, none of whom signed up for this to be an all-online class. Things will not go as I planned, and the same is true for my students. I must be flexible and compassionate. I extended that compassion through my willingness to grant exceptions and grace on deadlines. I showed up early for Zoom class, started class with a short check-in, and greeted every student as they entered the class. At the end of class, I stayed later, in case anyone wanted to talk more.

In the midst of this crisis, and with the endpoint very uncertain, I struggled to design an online pedagogy that represented my core beliefs about supporting students and their learning, and I learned some important things about myself as a teacher. I learned about my default teaching style and to resist that tendency. I recognized that I must be intentional about strategies that develop students' conceptual understanding of the material, and that I have to continue to search for ways to promote student independence, no matter the context.

First and foremost I gained a new appreciation for the power of compassion and flexibility as the fertile ground for growing the relationships that lead to learning. I need to remember that as we move through and beyond this crisis.

Questions? Comments? Want to connect? Reach Hal at: shuntsman1@avc.edu.

The History Corner

Joe Conrad, Solano Community College

I hope this finds you and yours healthy and well. This past semester I taught Calculus 1 and one of the standard topics is Newton's Method. Our text, Stewart's Early Transcendentals, 6th ed., mentions that it is also referred to as the Newton-Raphson Method. (Yes, Stewart is now in the 8th edition and soon will segue into the 9th, but we have retained the 6th to help students with their costs.) I thought it would be interesting to investigate the development of the method.

Let's recall that Newton's Method as we use it today is a method for approximating the roots of an equation of the form $f(x) = 0$, where f is a differentiable function. We start with an initial approximation, say x_1, and find a better approximation $x_2 = x_1 - f(x_1)/f'(x_1)$. This procedure is iterated until the desired accuracy is achieved. Ignoring the issues we sometimes talk about in class, this process will typically result in a two-decimal-place improvement with each iteration. So the question is: Did Newton or Raphson ever actually do this process? Quick answer: If we are looking for an iterative method using the derivative, then not really.

Isaac Newton (1642 – 1727) had a method for approximating the roots of equations that he shared in his *De analysi* published in 1711, but probably written around 1669. It was essentially a reworking of the method of François Viète (1540–1603) that was published in 1600. This method was improved by William Oughtred (1574–1760) and would have been well-known by Newton. Newton illustrated his method,

improved on Oughtred's with the equation $x^3 - 2x - 5 = 0$. He started with an initial estimate of 2 for the root. He then let p be the error, so the root is $2 + p$. Now, substitute $2 + p$ into the equation producing a new cubic $p^3 + 6p^2 + 10p = 1$. Since p is small, we can ignore its higher powers (very Newtonian!) leaving $10p = 1$ or $p = 0.1$. So then the root is approximated by 2.1. If more accuracy is desired, replace p in the second equation with $0.1 + q$. This will generate a new cubic equation ($q^3 + 6.3q^2 + 11.23q + 0.61$) and, after ignoring the powers of q, a new estimate (2.0946) for the root. Of course, this process can be continued as long as needed. (The actual root is 2.0945518… .)

In *De analysi*, Newton also introduced his fluxions, but after doing the method above which he treats as a purely algebraic activity. He only used his method in *De analysi* with polynomial equations. I should note that if this method is done in general, the resulting formula for the approximations is the same as that arrived at using calculus. Newton did use an approximation method for solving a non-polynomial equation in the *Principia Mathematica*, but this was very geometrical. If analyzed in the right way, this method does become equivalent to the modern Newton's Method, but this was not noticed until 1882. There is no indication that Newton himself thought of this as applying calculus.

Abraham Raphson (1648 – 1712) published a tract in 1690 which was enlarged and republished as a book in 1697 that contained an improvement on the method that Newton had used. As we saw, Newton generated new polynomials at each step and these polynomials will have increasingly complicated coefficients. Raphson did an equivalent process, but was able to retain the original polynomial throughout. This led to easier computations. He included 30 examples of his technique in his book, but all were polynomial equations up to degree 10. Just as with Newton, performing his process in general will lead to a formula that is the same as the one we generate when using calculus, but there is no indication that Raphson ever made the connection.

In 1740, Thomas Simpson (1710 – 1761) published a book of essays which included "A New Method for the Solution of Equations in Numbers." By this time, how to compute derivatives (or for the English, fluxions) was well-known and Simpson's process was equivalent to what we now call Newton's Method of using derivatives and iterating the process. Simpson does not mention any previous methods and even apologizes for bringing derivatives into the discussion "since being a more exalted Branch of the Mathematics, cannot be so properly applied to what belongs to common algebra." He clearly viewed this as a new process unknown to others before him. He gave several examples including polynomial equations, a square root function, a reciprocal and an exponential function. It was Joseph Fourier (1768 – 1830) who first restated the method using the prime notation for derivatives in 1831. He attributed the method to Newton and, due to the popularity of his work, caused the future attribution to Newton rather than Simpson.

We should not feel too badly for Simpson. He does show up in our calculus books, of course, for the method of using quadratic functions to approximate the area under a curve. Despite the name, versions of Simpson's Rule were developed by Bonaventura Cavalieri (1598 – 1647) by 1639 and James Gregory (1638 – 1675) published it in 1668.

Distance Learning and Social Justice Resources

A message from the Board of CMC³: The Board and many of our members have collected distance learning and social justice resources. In the interests of supporting our community college math faculty, many of these resources are listed below. We thank everyone who shared these resources with us and hope you find them as useful as we do.

Faculty resources for online learning, assessment, and engagement:

- Online Teaching and Distance Learning: There's a great discussion on at MAA Connect - including excellent advice from incoming MAA President Jenny Quinn. (MAA members use your login; others create a free login then "join the community.")
- ASCCC COVID-19 Faculty Resources
- ASCCC OERI Webinar: Teaching Math Online Using OER (April 16, 2020) - Watch Teaching Math Online Using OER webinar recording
- AMATYC's new social networking site allows you to have discussions with CC Math instructors across the nation
- AMATYC webinar: Accessible Course Shells for OER & Other Texts — All Ready to Adapt!
- AMATYC webinar: Exploring Math with Desmos
- AMATYC webinar: Teaching Statistics in an Online World
- Free technology tools for math
- Math videos: MathTV.com and mathispower4u.com
- Factual coronavirus information: see attached infographic, CDC general information web page
- How to use the math editor in CANVAS
- STEM resource finder:
- CODAP opensource software for online data exploration
- Putting courses online, general interest:
  - Please do a bad job of putting your courses online
- YouTube Zoom tutorial resources:
  - The official Zoom Tutorial page
  - Learn how to do breakout rooms and to start zoom meetings in general
  - Panel on Active Learning Online - Tuesday, 3/17, noon EST, Electronic Seminar in Math Ed. (via Zoom - details and a link here) co-organized by Tara Holm (Sepia'06) and featuring Ray Levy (Sun'07)

- Going online in a hurry
- An equitable transition to online learning
- How to make your online course accessible to most students.

- YouTube Zoom tutorial resources:
  - The official Zoom Tutorial page
  - Learn how to do breakout rooms and to start zoom meetings in general
- Panel on Active Learning Online - Tuesday, 3/17, noon EST, Electronic Seminar in Math Ed. (via Zoom - details and a link here) co-organized by Tara Holm (Sepia'06) and featuring Ray Levy (Sun'07)
- Best Practices for Remote Teaching with Maria Andersen. Recorded webinar & slides available here.
- ClassCalc is a **free digital calculator** with full support through **statistics, calculus and graphing**. ClassCalc also has a lockdown feature that lets you lock student devices onto ClassCalc so that all other distractions/cheating is blocked out - even remotely. For more info, visit this link or contact dan@classcalc.com.

Resources, resource collections, online events, on issues such as Social Justice, Anti-Racism, and Equity in Education:

- Resources on Social Justice for Students and Educators compiled by our own CMC^3 Treasurer, Leslie Banta, Math Faculty at Mendocino Community College
- Anti-Racism Resources collected by Academics for Black Survival and Wellness which include articles, books, podcasts, documentaries, TV series, and movies
- Recordings of Duke University's university wide online event; Living While Black
- Black History Month Library
- CTA Social Justice Resources
- BLM Reading List for Children 0-12
- Anti-Racism, a Resource Guide by Tasha K Updated June 2020
- Anti-Racism, a Resource Guide compiled by Sarah Sophie Flicker, Alyssa Klein in May 2020
- Teaching Tolerance in the classroom

CMC³ Foundation Report

Katia Fuchs, City College of San Francisco

The cancellation of the Tahoe Conference this year made it impossible for us to hold the events we so much love in April. However, we launched a campaign to try to make up for the donations we would have received at the conference, seeing as our students were more in need of our support than ever. I am so proud to say that we were able to match our fundraising efforts with what we had raised at the Tahoe Conference in previous years!

We continue to be extremely grateful to Debra Landre, the long-time sponsor of the student speaker scholarship at Tahoe. Despite the fact that we were not able to hold the conference, we awarded the speaker scholarship to Sarah Redden, a student at College of the Sequoias, who was preparing a talk on Music Generation with Markov Chains. Sarah Redden is a sophomore at College of the Sequoias in Visalia, California. She is an electrical engineering major who hopes to work in the Aerospace Industry. She was the CMC³ student poster winner in Monterrey this past fall and was selected to be a NASA Community College Aerospace student last year.

I would also like to thank those of you who, despite the turbulent times at the end of spring semester were able to nominate a student for a CMC³ scholarship. We were pleased to award scholarships to LiaMari Cox from Mendocino College, and Anara Myrzabekova from City College of San Francisco.

LiaMari is working on completing her associate's degree in astronomy from Mendocino college. She plans to transfer to a 4 year university to further her study of Astronomy, and she is especially interested in deep space and non-visible light spectra, as studied via computer modeling.

Anara graduated from City College of San Francisco with an associate's degree in mathematics this summer. She is looking forward to completing a psychology master's degree in her quest to become a data scientist to help improve the world we live in today.

We are proud of LiaMari and Anara and are thrilled to be able to support them in their educational journey.

I end by thanking all of you yet again for your faithful dedication to our students during this extremely difficult time. If you are interested in donating or learning more about the work of the foundation, please do not hesitate to contact me.

Math Nerd Musings

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recordings of all Zoom sessions. Some people are concerned that some students cannot attend synchronous class meetings at a specific time, but if a college offers both synchronous and asynchronous sections of a course, students can select what works for them. And a high percentage of students in our math courses have expressed a strong preference for synchronous

Because my colleagues who taught this summer also had such positive experiences, I'm hopeful that this fall will go marvelously as well. In fact, I believe we have stumbled across a form of remote instruction that can be used with great success well beyond sheltering.

Nonetheless, I'll be a very happy camper when I can once again be face-to-face with my students. As great as Zoom is at virtually capturing the essence of meetings, something is lost in the translation and requires me to expend more energy to make up for it. I look forward to being back in the classroom and getting reacquainted with that visceral experience!

Calendar

Visit the CMC website (https://www.cmc-math.org/conference-overview) for current information and details about their upcoming conferences.

November: AMATYC, Online (more info to come at https://amatyc.site-ym.com/)

December 11–12, 2020: CMC³ 48th Annual Conference, ONLINE (may be online or cancelled; more info to come via next issue of newsletter, website, and possibly e-mail). Contact James Sullivan, Sierra College, (916) 660-7973, jsullivan@sierracollege.edu

April 23—24, 2020: CMC³ 24th Annual Recreational Mathematics Conference (may be online or cancelled; more info to come via next issue of newsletter, website, and possibly e-mail). Contact: Larry Green, Lake Tahoe Community College, (530) 541-4660 ext. 341, drlarrygreen@gmail.com

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