Message from the NMMATYC President

First, I would like to express how honored and excited I am to be your new president, and I look forward to serving you to the best of my ability.

I would be remiss if I didn't comment on the fall season. As with every season, it is a time of change. The winds of change have also recently impacted Texas and developmental math in the form of House Bill 2223. I know in my hometown of El Paso, Texas, El Paso Community College is scrambling to meet the mandates of the Texas legislature regarding concurrent classes. We are caught in the whirlwind as developmental education reform sweeps across our nation. Both AMATYC, the American Mathematical Association of Two-Year Colleges and NADE, the National Association for Developmental Education, have held two summits over the years to address these changes. The third summit will be held prior to the AMATYC Conference from November 13-14 in Orlando, Florida. So, if you are interested in the future of developmental math please think about attending. The AMATYC Conference is from Thursday, November 15 to Sunday, November 18 in Orlando, Florida. Please consider becoming an AMATYC member, and I hope to see you all in Orlando!

NMMATYC celebrates its 30th anniversary in Silver City, New Mexico, and I'd like to thank Dr. Nancy Livingston for chairing this special event. She and her crew have been working hard to make this conference both informative and enjoyable. Please keep in mind students who are eligible for the Michelle Jimenez and Vicki Froelich Memorial Scholarships which are awarded at the conference. The deadline for all application material is to be turned in is Friday, March 15, 2019. Please see NMMATYC's website for details. Finally, please consider sharing your knowledge and successful classroom ideas by presenting at the conference.

Please contribute to the newsletter. Will your class or college celebrate Fibonacci Day (November 23)? Did you read a great book like *The Man Who Knew Infinity* by Robert Kanigel? (I read it 3 times.) Did you take great selfies and snapshots of you and your students constructing Sierpinski triangles? Send those articles, book reviews, photos, et al to our newsletter editor Jeremy Ramirez at newsletter@nmmatyc.com.

We are always trying to increase our membership. I highly encourage you to spread the good news about NMMATYC to anyone who might be interested in mathematics and promoting mathematics at the two-year college level: math faculty, non-math faculty, staff, college and early college students, members of your community, retirees, etc.

I will be working on your behalf with some great folks, and I'd like to introduce you to the 2018-2020 board members. We'd love to hear from you! Please contact any member of the board if you have any concerns, questions or suggestions that would improve our organization. We are here for you!

Have a wonderful fall!

Pat Barrientos
NMMATYC President

2018 – 2020 NMMATYC BOARD

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Message from the AMATYC Southwest VP

Hello my fellow NMMATYC friends! I hope your fall semester is off to a great start and that you are making plans to attend the AMATYC Conference in Orlando, FL on November 15-18.

There are several updates from AMATYC that I'd love to share with you. First, AMATYC has finalized our latest document called *IMPACT: Improving Mathematical Prowess and College Teaching*, and it is now available for download at https://amatyc.site-ym.com/mpage/IMPACT. All attendees at the AMATYC Conference in Orlando will receive a hard copy of *IMPACT*. Please share this document broadly with your colleagues! Next, don't forget that the National Math Summit will be held just prior to the AMATYC Conference on November 13-14 at the same hotel as the AMATYC conference in Orlando, FL. Registration is open, and more information is online at http://amatyc.org/

Are you interested in getting involved in AMATYC? We need you! AMATYC is seeking volunteers for the following positions:

- **AMATYC Assistant Program Coordinator** – This position was previously known as the Presider Chair but has since been renamed. The Assistant Coordinator will assist the Program Coordinator in many aspects of the planning of the program for the annual conference and serves as a member of the conference committee. More details are available at: https://tinyurl.com/yd8464w8.

- **AMATYC News Editor** – This position is responsible for coordinating the AMATYC News, soliciting articles, and editing submissions. AMATYC is seeking a wonderfully organized and energetic person to take on this role. This position received conference support to attend AMATYC and is a 3-year position beginning at the end of the AMATYC conference this November. If you are interested, please email me at april.strom@cgc.edu.

If you are attending the AMATYC Conference in November, please plan to attend the Southwest Regional Meeting and Luncheon on Friday, November 16 to network with colleagues from all over our region. This year's SW meeting will be a bit different than previous years, so come join us to learn and have fun!

Finally, if you or your colleagues have never been a member of AMATYC and would like to join, please reach out to me at april.strom@cgc.edu. I can provide you with a first-time member discount code for 50% off a one-year membership. A great deal for all new AMATYC members!

Happy fall, y'all!

April Strom
Vice President AMATYC Southwest Region

MAA/NMMATYC Southwestern Section Conference


"Where Adventure and Education Intertwine"

By Tanya Rivers
Western New Mexico University

The **MAA/NMMATYC Southwestern Section Conference** will be held on **April 12 & 13, 2019**. This conference will be hosted by Western New Mexico University (W.N.M.U.: **https://wnmu.edu/**)

Our conference features two keynote speakers: Polya Lecturer Dr. Carlos Castillo-Chavez and Section Visitor MAA Secretary Dr. James Sellers

Carlos Castillo-Chavez is a mathematical epidemiologist and a Regents Professor of Mathematical Biology at Arizona State University. He has won awards by the American Association for the Advancement of Science (AAAS) Mentor Award and Fellow (2007), the Stanislaw M. Ulam Distinguished Scholar by the Center for Nonlinear Studies at Los Alamos National Laboratory (2003), the Society for Advancement of Chicanos and Native Americans in Science (SACNAS) Distinguished Scientist Award (2001), the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring (1997), and the Presidential Faculty Fellowship Award from the National Science Foundation and the Office of the President of the United States (1992–1997). Carlos is the executive director of the Mathematical and Theoretical Biology Institute and the Institute for Strengthening the Understanding of Mathematics and Science as well as the founding director of the Mathematical, Computational and Modeling Sciences Center at ASU.
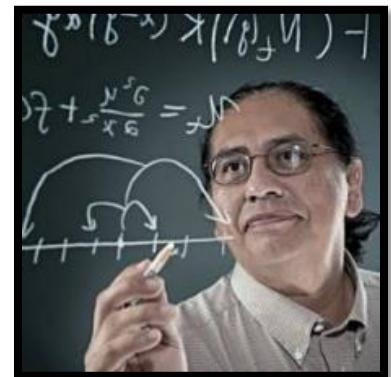
Dr. James Sellers is Professor of Mathematics and Associate Head for Undergraduate Mathematics at Penn State University. He also serves as the distinguished secretary of the MAA. Dr. Sellers will discuss a variety of issues surrounding advising of undergraduate students. This includes "pre-advising" (such as working with high school students and parents), advising of undergraduates considering a change to the mathematics major, advising of mathematics majors, and professional advising of mathematics students (as they look to their future after graduation).

Conference Special Events
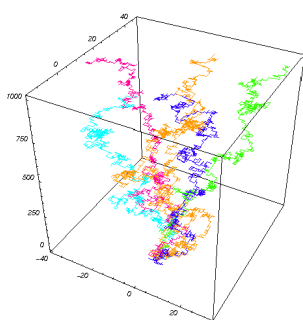
W.N.M.U. Pi Walk Event takes off April 13 at 7:00 a.m. on Silver City Trails. Join us for a free T-shirt!
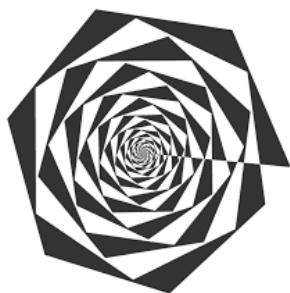
Students from the Expressive Arts Department will display their creative work connecting art with mathematics April 12-13.

W.N.M.U. Mariachi Band plays 5:00 p.m. during April 12's Happy Hour

Registration will open in November. If you have questions, please contact Dr. Nancy Livingston, Associate Professor of Mathematics and Computer Science and MAA Section Chair, at W.N.M.U.: Nancy.livingstonpotter@wnmu.edu

About Silver City, New Mexico
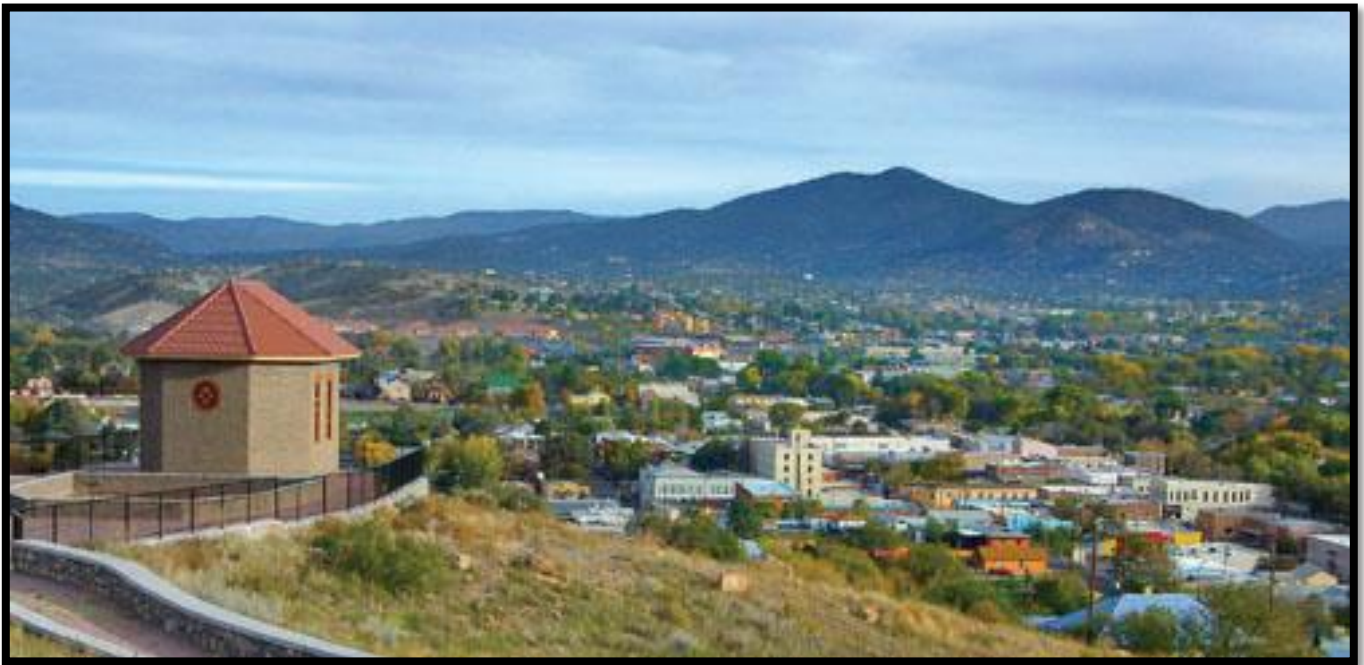
The Town of Silver City sits atop a site that has been home to Native American, Hispanic and Anglo settlers for hundreds of years, and these vibrant cultures fill an important part of the Town's exciting present day.

The Town of Silver City was formed in the 1870s, after the discovery of silver in and around the Town. Silver City quickly became a boom town, and our Wild West past includes the first arrest and (brief) incarceration of William Bonney, better known as Billy the Kid. Although Bonney moved on, the Kid's family lived in the area for many years, and his mother is buried in the Town's Memory Lane Cemetery.

Today, Silver City is a bustling town with Western New Mexico University together with a diverse business community and an award-winning historic downtown. The Washington Post just published a feature on our beautiful destination town – see https://wapo.st/2y0ENO8?tid=ss_mail&utm_term=.779664b3018b.

Check out http://www.townofsilvercity.org/ to discover all about Silver City!

Mathematical Contest in Modeling (MCM)

By Ruth Favro
Lawrence Technological University, Southfield, MI

Never organized MCM teams? Do it for 2019!

The Mathematical Contest in Modeling (MCM) is a 4-day, international math modeling contest. Teams of 3 students choose one of two open ended applied math problems, research it, model it using math, computers, and other science skills, then write a research paper showcasing their results. Good writing and teamwork are essential.

It is demanding, fun, and a great benefit to the students. Teams with interdisciplinary knowledge are good. Our teams at LTU have had majors in math, computer science, physics, chemistry, and several engineering fields.

The problems are often current. The 2015 problems concerned (A) getting medicine to Africa to treat the Ebola epidemic, and (B) searching for an airplane lost in the ocean, emitting no signals.

Benefits to students include the teamwork, producing results under time pressure, self-confidence in being able to learn new material, concise exposition, and more. We follow up by having each team give a public presentation of their papers on campus and inviting teams to present at local conferences. Participation can go on their resumé.

Papers are judged into categories: Successful Participant, Honorable Mention, Meritorious, Finalist and Outstanding. There were a few hundred teams in the beginning in the mid '80s, in 2018 there were over 10,000 teams entering, a large proportion of them from China.

It would be great to have more US teams. A faculty member willing to sponsor a team will find problems from prior years for practice online at the contest site, as well as elsewhere. I would be willing to help with tips and prior student papers.

There is a $100 per team registration fee, and you will want to provide some food over the long weekend, so it is helpful to have the department agree to pick up the cost (otherwise you are in for a lot of bake sales or other fundraising).

Dates for 2019 are Jan. 24 (5:00 pm) – Jan. 28 (8:00 pm). Go to www.comap.com and click on the MCM link in the menu bar for more information. My email is rfavro@ltu.edu.

# Visualizing Calculus

By Raul Holguin
Irvin High School / El Paso Community College

I teach Dual Credit **Calculus I and Calculus II** at Irvin High School in El Paso, Texas. One of the calculus concepts that students have difficulty understanding is finding the volume of a solid using a given cross-sectional shape bounded by two curves or lines. The most common cross-sectional shapes given to the students are semi-circles, equilateral triangles, squares and isosceles right triangles with either the hypotenuse or one leg as the base.

The project that I give to my students is to build the solid out of foam paper by measuring the length between the curves, making the shape and cutting it. They must do this process several times until they complete the entire space between the curves.

As we know, the volume of a cross-sectional solid is $V = k \int_a^b (f(x) - g(x))^2 dx$, where $f(x) > g(x)$ and the k is a constant depending on the geometric figure. The following are the values of k: 1 for squares, $\frac{\pi}{8}$ for semicircles, $\frac{\sqrt{3}}{4}$ for equilateral triangles, $\frac{1}{4}$ for an isosceles right triangle with hypotenuse as the base and $\frac{1}{2}$ for an isosceles right triangle with one leg as the base.
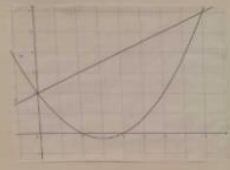
Also, to simplify the formula, we define the variable $s = f(x) - g(x)$, for which $f(x)$ is the top function and $g(x)$ is the bottom function. I have had very impressive solids using this technique. The pictures below show some of the solids that were created by the students.
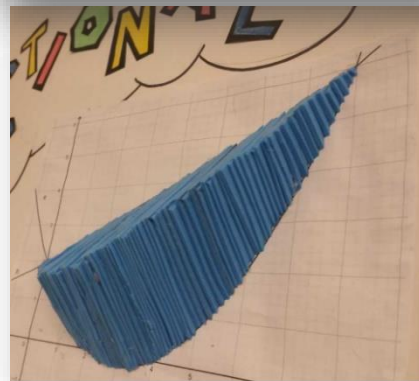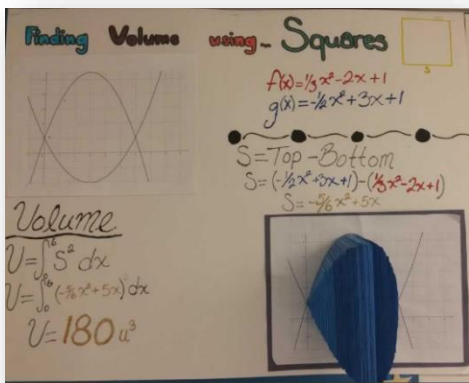
This last year, in Spring 2018, two of my students took this project to the next level. They were able to use a 3-D printer to create the solids. The following pictures are of their final products.
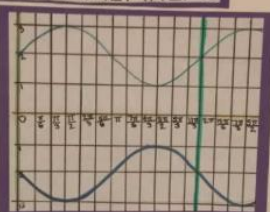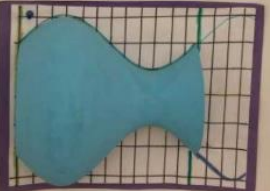
NMMATYC Scholarships and Faculty Awards

If you know of a student that has completed a **minimum of 12 credit hours** (6 hours must be from a New Mexico or El Paso 2-year college), maintained an **overall GPA of 3.2 and a cumulative GPA of 3.5 in all MATH courses**, please refer them to the **NMMATYC website** at https://sites.google.com/site/nmmatyc2019/scholarships

Two Memorial Scholarships are offered:
"Vicki Froehlich" and *"Michelle Jimenez"*
Each scholarship is in the amount of $500
The deadline to apply is March 15th, 2019.

We also offer two **faculty awards**:
"David Lovelock Teaching Award"
"NMMATYC Professional Developmental Travel Award"
Further information can be found at https://sites.google.com/site/nmmatyc2019/scholarships
The deadline to apply is March 15th, 2019.

NOTE: The NMMATYC website is being updated. Please access the links for scholarships and faculty awards after the Thanksgiving break. For additional information please contact Sara Hanson: nominating@nmmatyc.com

Articles for the Next Newsletter?

If you want to share any exciting news going on in your college, interesting presentation, best practices in the classroom, or events happening in the world of mathematics, have it published in the next NMMATYC Newsletter! Submit your articles to Jeremy Ramirez at newsletter@nmmatyc.com

Visit us at www.nm.matyc.org