Math and C.S. Senior Presentations

The dates for the mathematics and computer science senior presentations are:

March 10: 4:00 *Katherine Maiville*
              4:30 *Marcus Malling*

              5:30 **SENIOR DINNER**

March 12: 4:30 *Peter Nicaj*
              5:00 *Jared Anderson*

March 17: 4:00 *Andrew Borzi*
              4:30 *Pete Carravallah*

March 19: 4:00 *Leighton Collingwood*
              4:30 *Mason Ippel*

March 24: 4:00 *Brittany Sommerville*
              4:30 *Cheyenne Hansen*

March 26: 4:00 *Nathan Haut*

March 31: Senior Thesis Presentation:
              4:00 *Brianne Giddis*

Please attend and support our seniors!

Michigan Section of MAA meeting

The 2020 Annual Meeting of the Michigan Section of the Mathematical Association of America (MAA) and the Michigan Mathematical Association of Two-Year Colleges (MichMATYC) will be hosted by Grand Valley State University from Friday-Saturday, April 3-4. This should be a very interesting conference that is not far from Alma, so consider going to hear some great math talks, or even presenting a poster. Submissions of contributed papers and student posters are due no later than Friday, March 13th,

2020. For more details, visit the meeting website: https://www.gvsu.edu/mism2020/

Ptolemy's Theorem

Ptolemy was a Greek astronomer, geometer and geographer who lived from 100-170 AD.

During the 2nd Century AD, Ptolemy created the table of chords. A chord of a circle is a line segment whose endpoints lie on the circle. This table calculated the lengths of chords with endpoints separated by an arc of n degrees. This table became the earliest trigonometric table used in practical applications since it was equivalent to a table of values for the sine function. The table itself was calculated by the use of Ptolemy's Theorem.

Ptolemy's Theorem is an examination of the relationship between the four sides of a cyclic quadrilateral and its two diagonals. A cyclic quadrilateral is simply a quadrilateral whose vertices lie on the same circle. If we label the vertices A, B, C, and D, Ptolemy's Theorem states
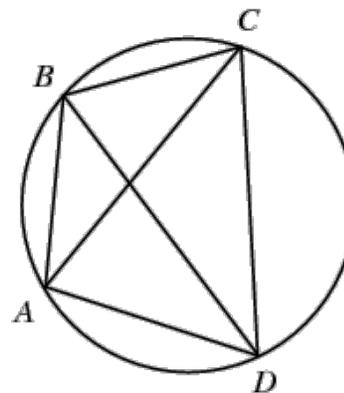
that $AC * BD = AB * CD + BC * AD$, where AC and BD are the quadrilateral's diagonals.

Source: http://mathworld.wolfram.com/

If a rectangle is a cyclic quadrilateral, then Ptolemy's Theorem reduces to the Pythagorean Theorem. We can also obtain the value for the

golden ratio by using Ptolemy's Theorem to explore the relationship between the length of the sides and the length of the chords in a regular pentagon. We end up with the relationship $b^2 = a^2 + ab$ which results in $\frac{b}{a} = \frac{1+\sqrt{5}}{2}$.

When examining non-cyclic quadrilaterals, Ptolemy's Theorem becomes Ptolemy's inequality: $AB * CD + BC * DA \geq AC * BD$. This is the general form of Ptolemy's Theorem, which is equivalent to Ptolemy's Theorem if the quadrilateral is cyclic. ~ *Brandon Hart*

Puzzle of the Bi-week

Okay calculus fans! Here is a nice related rates problem: The minute hand on a clock is 8 inches long and the hour hand is 6 inches long. How fast is the distance between the tips of the hands changing at three o'clock?

A prize of **$3.00** will be awarded to the 1st student who submits a correct solution to **Dr. Molina.**

Student assistant:	Brandon Hart
Faculty advisor:	Brad Westgate
Distribution:	Jackie Gage SAC 224

If you would like to submit an announcement or article, please email it to Dr. Westgate (westgatebs@alma.edu).

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