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# 2007 Sonia Kovalevsky Math for Girls Day Featured Workshop: Knot Theory

Association for Women in Mathematics, Lincoln University of Missouri

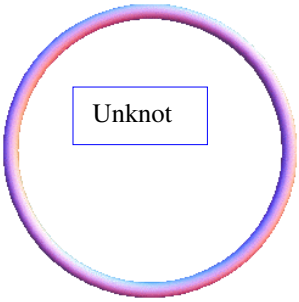
Mrs. Bernadette Turner,
Assistant Professor of Mathematics Lincoln University
Workshop Title: Knot Theory

Mrs. Turner presented a workshop for parents and math teachers. The purpose of this workshop was:

1. To show how mathematics supports and organizes scientific theory
2. To give teachers and parents ideas for incorporating knot theory in their classrooms
3. To show activities that builds NCTM goals for spatial visualization for problem solving and critical thinking.

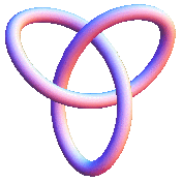
The class began with a lesson about the history of knot theory as a branch of topology and its relevance to today's study of DNA molecules and viruses. Participants were given a handout, which included problem solving activities and examples that could be used in class or with their daughters in a home-school lesson. After the initial discussion of real life uses of knot theory, participants were given a two - foot length of clothesline rope and a clipboard to help hold their knots in place. On the cover page of the handout were some examples of knots and participants were told to try and find the "unknot."

The unknot, also called the trivial knot (Rolfsen 1976, p. 51), is a closed loop that is not knotted.



Unknot

Participants also studied the two different forms of the trefoil knot and then charted and classified knots by the number of over and under crossings.



Trefoil Knot

At the end of the workshop, teachers and parents came up with a list of ideas where they could incorporate lessons using knot theory in their current curriculums.