Math News

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KME Corner

KME will represent MATH at FSU's Majors Fair on Wednesday, October 3, 11:00 – 3:00 in the Lance Center ARMAH. KME will also meet on Tuesday, October 16 at 6:30 in DH 325.

U.S. Census Return Rate Challenge

The challenge is to develop a statistical model to predict census mail return rates at the Census block group level of geography. The Census Bureau will use this model for planning purposes for the decennial census and for demographic sample surveys. The model-based estimates of predicted mail return will be publicly released in a later version of the Census "planning database" containing updated demographic data. Participants are encouraged to develop and evaluate different statistical approaches to proposing the best predictive model for geographic units.

Please note also that as described in the rules, only US citizens and residents are eligible for prizes which total $25,000. Deadline for submissions is the end of October. See http://www.kaggle.com/c/us-census-challenge.

Professor to Present

Dr. Laxman Hegde will be travelling to the Northeast SAS Users Group 2012 conference in Baltimore on November 12, 2012, to make a presentation, entitled "Implementing and Interpreting Canonical Correspondence Analysis in SAS. For more on the talk, on SAS, or on attending the conference, contact Dr. Hegde.

Seminar Scheduled

A seminar on uniform polyhedral is scheduled for Tuesday, October 23, 6pm-7pm in DH 218. Dr. H. Stephen Morse of George Mason University will present "How 5 Regular Solids Turned Into 75." The lecture is very suitable for students.

The Pizza Paradox

G.O. has just made a small pizza pie and a large pizza pie. He cuts a round hole from the center of each and is left with two pizza rings. When he places a ruler along side of (or tangent to) the hole in each pizza, G.O. finds that, for both pizzas, the distance between the outer edges of the pizza is exactly the same. What G.O. doesn't realize, however, is that any two pizza rings with 10-inch chords tangent to a hole always have the same area (that is, the same amount of pizza). Given that information, what is the area of each pizza ring?

Undergraduate Research

*By **Justin Good***

My research was basically about exploring the links between geometry which studies the rigid properties of curves and surfaces such as arclength and curvature and topology which doesn't depend on the shape of the curve or surface but how it is connected. My own personal research was to study different types of Lissajous curves given parametrically by C = (cos(at),sin(bt)) with t in the interval [0,2Pi] and where a and b are natural numbers and relatively prime. My conjecture was that all of the Lissajous curves with one of a and b even and the other odd will be regularly homotopic to a figure eight curve. But all the Lissajous curves with a and b both odd will be regularly homotopic to a circle. By regularly homotopic I mean that one curve can be manipulated into the other curve without creating any cusps or sharp bends. I sketched a proof of my conjecture. It turns out that only the total curvature of each Lissajous curve determines what curves it will be regularly homotopic to. So in the end even though each Lissajous curve looks different and can have a wild number of turns and curves each one only has a total curvature of either 0 or 2Pi.

The other part of my research looked at Euler's characteristic (given by chi(s)= V - E + F where V, E and F are the vertices, edges, and faces respectively, which the surface is partitioned into), and how the Euler characteristic determines the properties of vector fields on that surface.

MAA Sectional Meeting Set

The Fall meeting of the MD-DC-VA section of the Mathematical Association of America will be held at the Virginia Military Institute (VMI) on October 26 and 27. In addition to the usual contributed paper sessions, invited sessions include a workshop and a banquet address that highlight models of hyperbolic geometry to create a "hyperbolic crocheted coral reef," information about "quantum information" and research with undergraduate students, and a choice of breakout session of a forum on the status of mathematics education or a small workshop on using elections to teach quantitative literacy.

Answer to Summer Homework

If a bowl contains 50 colored balls – 13 green, 10 red, 9 blue, 8 yellow, 6 black, and 4 white – the smallest number of balls that you must pick (blindfolded) to guarantee at least 7 balls of the same color is ……

6+6+6+6+6+4+1 = 35, by the Pigeonhole Principle.

Math News is published for students, faculty, staff, and administrators by the Department of Mathematics.