The SUMO Speaker Series for Undergraduates

(Pizza Provided)
Wednesday, January 19th
4:15-5:05, room 380C

Transcendental Numbers

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ABSTRACT:

What is a number? 1,2,3,4,... are clearly numbers. If we want to think about subtraction, we are led to 0,-1,-2,-3,-4,... naturally, and if we want to think about division, we are led to rational numbers, 12/13, 22/7, 252/1, -240/691,... If we want to solve equations like $x^2-2=0$ or $x^6-34x^3+78=0$, we need to go beyond rationals to numbers like $\sqrt 2$ and $17+\sqrt{211}$.

But then there are numbers like π and e that are not defined as the solutions to a specific polynomial equation (with integer coefficients). These numbers are called transcendental. Almost every number is transcendental, but proving that an individual number like π or e actually is transcendental is incredibly difficult. In this talk I'll give lots of examples of these mysterious numbers, discuss some unsolved problems, and try to give some baby examples of how a proof might go.

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