

Undergraduate Mathematics Seminar

Department of Mathematics, Fall 2020



An integral calculus approach to the Basel problem

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Date: Tuesday, October 13

Time: 12:00 - 12:50 pm EDT

Location: Zoom, ID: 935 1032 7072

Cezar graduated with a PhD from Pitt under Piotr Hajlasz and William C. Troy with a thesis in number theory, analysis and special functions. Also, he was the Pitt Putnam coach between 2013-2017. Currently, he is a postdoctoral fellow at Texas Tech University working on some problems regarding the special values of L-functions (Riemann and multiple zeta). Moreover, he has been the TTU coach for the Putnam competition since 2018.



In this talk we present two proofs for the famous Basel problem which concerns Euler's formula for $\zeta(2)$. These two approaches are based on the papers of Stark (1978) and Moreno (2016).

The main ingredients of these two proofs of $\zeta(2) = \frac{\pi^2}{6}$ are the first and the second mean value theorems for integrals which are taught in any introductory analysis course. If time allows, using similar ideas, we will also give a brief account for Euler's other two formulas such as $\zeta(4) = \frac{\pi^4}{90}$ and $\zeta(6) = \frac{\pi^6}{945}$.

**SPEAKER(S) FOR
NEXT WEEK:**

Ed Southall



Organized by: Derek Orr, Tom Everest, Jeremiah Morgan, and Jeff Wheeler