Course Goals: Math 432, Complex Analysis

A. Complex Numbers

Students will be able:

- Carry out arithmetic of complex numbers;
- Apply the geometry of complex numbers to questions of Euclidean geometry.
- Convert between the rectangular and polar forms of complex numbers.
- Apply DeMoivre's theorem

B. Visualizing Complex functions

Students will be able to

· Use Mathematica or other appropriate software to visualize complex mappings.

C. Complex Function Theory

Students will be able to:

· Compute line integrals for complex-valued functions.
· State and apply Cauchy's theorem.
· State, apply, and prove Liouville's theorem and selected other consequences of Cauchy's theorem.
· Use residue theory to compute path integrals and real-valued integrals of real functions.

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