

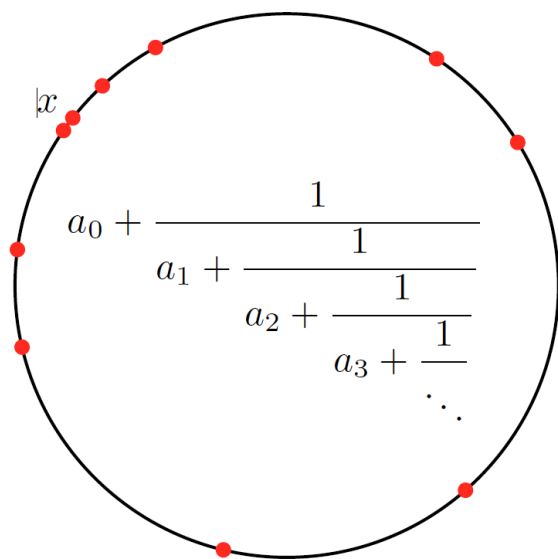
The MATHEMATICS Honors Lecture Series



Jad Salem
Math Major '17

Dynamical Systems, Binary Expansions, and Continued Fractions

A dynamical system is a set X , called a measure space, along with a transformation T on X . A particularly interesting class of dynamical systems is the ergodic systems -- those for which the transformation T "mixes up" the space X well enough. These systems first arose in statistical mechanics, in an attempt to model the behavior of particles in a confined space. Interestingly, the theory of dynamical systems -- in particular, ergodic theory -- has widespread applications to number theory and combinatorics. We will use this theory to discuss the irrational rotation on the circle and the structure of binary and continued fraction expansions of typical real numbers. Finally, we will discuss rational approximations of real numbers and connect this theory back to the irrational rotation.



Thursday, May 4, 2017

Reception, 4:00 p.m. ~ King 203

Lecture, 4:30 p.m. ~ King 239