ALGEBRA II, FALL 2005

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We will explain the notion of height of a rational point of an algebraic variety. We will then introduced the canonical height associated to a dynamical system on the Riemann Sphere. We will study such dynamical systems from an algebraic point of view. In particular we will look at the dynamics associated to the multiplication by 2 in an elliptic curve . We will relate these notions and the questions they raised to the abc conjecture and the Lehmer conjecture.

This course will use the basic notions of Algebraic Number Theory like: Number Fields , Ring of Integers, Class group. We will recall without proofs the facts we need at the beginning of the class to make it accessible to a good student of Algebra I (Sources : P.Samuel "Algebraic Numbers", My notes "Basic Aritmetic Geometry" on my web site at gc.cuny.edu –the french version is more complete-).

Books :

Hindry –Silvermann "Introduction to Diophantine Geometry"(Springer)

Everest - Ward " Heights of Polynomials and Entropy in Algebraic Dynamics"

Article:

With J.Pineiro and T.Tucker "Mahler measure for Dynamical systems on P1 and Intersection Theory on a Singular Arithmetic Surface" Progress in Math Birkhauser (235) Accessible on my web site.