Modular Forms and Special Values of L-Functions

Beginning with work of Euler, L-functions—like the Riemann zeta function and its cousins the Dirichlet L-series—have been objects of central interest in number theory. In addition to their analytic importance (e.g., the Riemann hypothesis) certain values of these functions are either known or expected to have algebraic significance. Euler knew that the value of the Riemann zeta function at non-positive integers is a rational number. Do these rational numbers mean anything? Dirichlet proved a “class number formula” relating the class numbers of binary quadratic forms to a value of his L-series for a quadratic character, later generalized in Dedekind's class number formula for number fields. As the family of L-functions has grown (now including L-functions for modular forms and algebraic varieties) so has the number of such formulas—most conjectural—beginning with the celebrated Birch-Swinnerton-Dyer conjecture for the L-function of an elliptic curve. These talks will be an overview of one circle of ideas that continues to yield new results toward such formulas. They will begin with some simple cases related to the Riemann zeta function and hopefully end with some new results for the Birch-Swinnerton-Dyer formula.

- **The saga of 691**
  Tuesday, January 26, 2010 • 4:10 p.m. • Room 1360 East Hall

- **Special values**
  Wednesday, January 27, 2010 • 3:10 p.m. • Room 3088 East Hall

- **Families of modular forms and the BSD formula**
  Thursday, January 28, 2010 • 3:10 p.m. • Room 2866 East Hall

A reception for Professor Skinner will be held at 5:00 p.m.
Tuesday, January 26, in the Mathematics Upper Atrium, East Hall