1106-11-255 **Barry R. Smith*** (barsmith@lvc.edu), 101 N. College Dr., Annville, PA 17003. *End-symmetric continued fractions and binary quadratic forms.* Preliminary report.

With each finite sequence of positive integers, we associate a positive integer, built from continued fractions, that we call the alternant of the sequence. There are only finitely many sequences with a given alternant value, and we put this fact to three uses. 1) We show that the sequence of quotients of the continued fraction expansion of a rational number $\alpha/\beta > 1$ when β satisfies the congruence $x^2 + nx \pm 1 \equiv 0 \pmod{\alpha}$ must have one of a finite number of "asymmetry types", generalizing the old theorem that the sequence of quotients is symmetric precisely when $\beta^2 \equiv \pm 1 \pmod{\alpha}$. 2) We introduce a bijection between sequences with alternant n and the finite set of Zagier-reduced binary quadratic forms with discriminant $n^2 \pm 4$ and show that the Zagier reduction algorithm corresponds to a simple operation on the corresponding sequences. 3) We craft an algorithm, based on the Euclidean algorithm, for producing the representations of a positive integer n by an indefinite form with discriminant of the form $n^2 \pm 4$. (Received August 21, 2014)