1125-11-1778 **J. Larry Lehman*** (llehman@umw.edu), Department of Mathematics, University of Mary Washington, 1301 College Avenue, Fredericksburg, VA 22401. *A Continued Fraction Algorithm for Quadratic Numbers, Forms, and Ideals.* Preliminary report.

We demonstrate an algorithm for constructing the continued fraction expansion of an arbitrary irrational quadratic number v, that is, a root of a degree two polynomial in $\mathbb{Z}[x]$ having positive discriminant Δ, not a square. The method associates to v a pair of integers a and k for which a divides $\phi(k)$, where $\phi(x)$ is a particular quadratic polynomial of discriminant Δ. These same pairs a and k produce all quadratic forms of discriminant Δ, and all ideals of a domain D_Δ of quadratic integers. We show that this algorithm also allows us to determine all distinct classes of these quadratic forms and ideals. (Received September 19, 2016)