We present a geometric proof of the following theorem of Jozsef Beck. Let $\alpha$ be a quadratic irrational. Denote $D(n) = \text{Card}(0 \leq j < n \text{ such that } \{\alpha j\} < 1/2) - n/2$ where $\{\ldots\}$ denotes the fractional part. Choose $n$ uniformly distributed between 1 and $N$. Then there are constants $A$ and $B$ such that $(D(n) - A \ln N)/(B \sqrt{\ln N})$ converges to the standard Gaussian as $N \to \infty$. (Received September 16, 2013)