1086-12-2434 **Benjamin L Weiss*** (`bweiss@bates.edu`), Mathematics Department, Hathorn Hall, Lewiston, ME 04240, and **Michael E Zieve**. *The Decomposition of Solutions to the Polynomial Pell Equation.*

We discuss a method of computing all decompositions of solutions $G(X)$ of the polynomial Pell equation $G(X)^2 - P(X)Q(X)^2 = 1$ with $\deg(P) = 4$. The techniques only require analyzing the ramification indices of $G(X) - T$ over $\mathbb{C}[T]$, and allow us to prove irreducibility results of $T_k(Y) - G(X) \in \mathbb{C}[X, Y]$ for Chebyshev polynomials T_k. We'll briefly discuss other previous methods of analyzing the decomposition of $G(X)$ by relating it to torsion points on elliptic curves. (Received September 25, 2012)

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