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Beth Malmskog (beth.malmskog@gmail.com), Department of Mathematics and Statistics, Villanova University, and **Christopher Rasmussen*** (crasmussen@wesleyan.edu), Department of Mathematics & Computer Science, Wesleyan University. *Picard curves with good reduction away from 3.*

Curves with good reduction over a small set of primes often present both unusual arithmetic and geometry, but are hard to find explicitly in practice. Motivated by earlier work of N. P. Smart, we determine all Picard curves over \mathbf{Q} with good reduction away from 3. We provide a correspondence between such curves and various equivalence classes of binary forms; finding all appropriate forms involves solving an S -unit equation.

We discuss connections between the arithmetic of the Jacobians of these curves and a long-standing question of Ihara on the nature of the canonical outer Galois representation associated to $\mathbf{P}_{01\infty}^1$. (Received September 09, 2014)