

1077-12-128

Benjamin L Weiss* (blweiss@umich.edu), Benjamin Weiss, 1272 Beacon St. Apt 8, Brookline, MA 02446. *Diophantine Equations With Two Separated Variables.*

We classify pairs of polynomials $G, H \in \mathbb{C}[T]$ such that $G(X) = H(Y)$ defines an irreducible curve of genus zero, excepting the cases where $G(X)$ or $H(Y)$ is a power of a smaller degree polynomial. As a consequence, we obtain results about pairs of polynomials $G, H \in \mathbb{Q}[T]$ for which the equation $G(X) = H(Y)$ has infinitely many rational solutions.

We'll briefly discuss the previous results applied to this classification. These include Riemann's existence theorem for covers of punctured spheres; the Riemann-Hurwitz formula; Fried's result classifying factors of $G(X) - H(Y)$ in terms of the decompositions of $G(X)$ and $H(Y)$; the classification of Cassou-Nogues and Couveignes for indecomposable polynomials $G(X)$ and $H(Y)$ with $G(X) - H(Y)$ reducible. (Received July 28, 2011)