SOLVING ELLIPTIC DIOPHANTINE EQUATIONS AVOIDING THUE EQUATIONS AND ELLIPTIC LOGARITHMS

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Abstract. We determine the solutions in integers of the equation $y^2 = (x+p)(x^2+p^2)$ for $p = 167$, 223, 337, 1201. The method used was suggested to us by Yu. Bilu, and is shown to be in some cases more efficient than other general purpose methods for solving such equations, namely the elliptic logarithms method and the use of Thue equations.