

Some arithmetic properties of twists of the Klein quartic.

Abstract. We will start introducing the Klein quartic: $x^3y + y^3z + z^3x = 0$. We will describe some of its properties, most of them compiled in [1]. In particular, we stress the fact that it is isomorphic over \mathbb{Q} to the modular curve $X(7)$. We will study its twists via two different approaches, via the algorithm described in [3] and via a modular interpretation of its twists. Some of the arithmetic properties that we will study are: the set of points over finite field of its twists (the Generalized Sato-Tate Conjecture, [2]), and the set of rational points and of \mathbb{Q}_p -rational points (Hasse Principle).

References

- [1] N.D. Elkies, "The Klein quartic in Number Theory", The Eightfold Way MSRI Publications Volume 35, 1998.
- [2] F. Fité, E. Lorenzo, A. Sutherland, "Sato-Tate distributions of twists of the Fermat and the Klein curves", preprint.
- [3] E. Lorenzo, "Twists of non-hyperelliptic curves", preprint.