

Given an equation of the form $f(x, y) = 0$, where f is a polynomial in two variables with rational coefficients of degree lower or equal to three, we will study the properties of the set of its rational solutions. We will show that if f is irreducible and the degree of f is three, then the corresponding cubic curve is birationally equivalent to a special cubic curve, often called elliptic. Furthermore, we will define a group law on the set of rational points of an elliptic curve and finish with the proof of Nagell-Lutz theorem, which states that all rational points of finite order in such defined group have integral coordinates.