The linear solution to the canonical elliptic curve

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I supply the linear solution to the canonical elliptic curve.
The paper ends with "The End"

Introduction

The canonical elliptic curve is

$$y^2 = x^3 + ax + b$$

The linear solution to the canonical elliptic curve

The linear solution to the canonical elliptic curve is

$$x = \frac{\alpha^2}{3} + \frac{\sqrt[3]{2\alpha^6 + 18\alpha^3\beta - 9a\alpha^2 + \sqrt{4\left(-\alpha^4 - 6\alpha\beta + 3a\right)^3 + \left(2\alpha^6 + 18\alpha^3\beta - 9a\alpha^2 + 27\beta^2 - 27b\right)^2}} + 27\beta^2 - 27b}{3\sqrt[3]{2}} - \frac{\sqrt[3]{2}\left(-\alpha^4 - 6\alpha\beta + 3a\right)}{3\sqrt[3]{2\alpha^6 + 18\alpha^3\beta - 9a\alpha^2 + \sqrt{4\left(-\alpha^4 - 6\alpha\beta + 3a\right)^3 + \left(2\alpha^6 + 18\alpha^3\beta - 9a\alpha^2 + 27\beta^2 - 27b\right)^2}} + 27\beta^2 - 27b}$$

$$y = \alpha x + \beta$$

where
α and β are constants such that x and y are well-defined.

The End