Field Extensions and Elliptic Curves

Distributed Lab

August 1, 2024

Plan

Field Extensions

Field Extensions

Let us begin with complex numbers $\mathbb{C}$...

Definition

Complex numbers $\mathbb{C}$ are defined as the set of pairs $(x, y) \in \mathbb{R}^2$ where addition is defined as $(x_1, y_1) + (x_2, y_2) = (x_1 + x_2, y_1 + y_2)$, and the multiplication is:

$$(x_1, y_1) \cdot (x_2, y_2) = (x_1 x_2 - y_1 y_2, x_1 y_2 + x_2 y_1). \tag{1}$$

Definition

Complex numbers $\mathbb{C}$ is defined as the set of $x + iy$ where $i^2 = -1$.

Thanks for your attention!