

Complex Numbers

History:

- 1) Complex numbers were first introduced by G. Cardano (1501-1576) in his *Ars Magna*, chapter 37 (published 1545) as a tool for finding (real!) roots of a cubic equation: $x^3 + ax + b = 0$. However, he had serious misgivings about such expressions (e.g. $5 + \sqrt{-15}$). He referred to thinking about them as “mental torture”.
- 2) R. Bombelli (1572): In his three books on *Algebra*, he introduced the symbol i and established rules for calculating in \mathbb{C} .
- 3) A. Girard (1629): called $a + \sqrt{-b}$ “solutions impossibles”.
- 4) R. Descartes (1637): called them “imaginary numbers”.
- 5) After Descartes, many leading mathematicians made free use of complex numbers: Bernoulli, Moivre, Euler, ..., Argand, Gauss, ...
- 6) The term “complex number” seems to have originated with C. F. Gauss (1831).