

Landau's four problems.

Analysis and solutions

Author: Ing. Sergio Adrián Martín

Introduction:

From the time of the ancient Greeks to the present there has been a great variety of conjectures and theories about prime numbers. For the London mathematics congress in 1912, Edward Landau raised 4 conjectures that could not be validated or proved as theorems, and stated that due to the limitations of his time, they could not be verified. These problems were:

1-The Goldbach conjecture.

2-Legendre's conjecture.

3-The twin primes conjecture.

4-The conjecture that the set of primes that responded to the equation at $a_2 + 1$ had infinite elements.

By 2012, at least 3 of these guesses had already been resolved. This year (2021), I have come up with a solution to the Goldbach conjecture. There is a possibility that other authors have gotten ahead of me, or that their proofs are wrong, or have only partially solved the Goldbach Conjecture. Anyway, in this work, I make a compendium of the solutions to these four conjectures, and I present the analyzes that have allowed me to reach conclusive results.

Time will take care of showing who was closest to the truth.