

Curiosities of prime numbers

Twin primes

We say that two prime numbers are twin when they differ by two, for example the following ones are pairs of twin primes: 3 and 5, 5 and 7, 11 and 13.

Exercise: Find out all pairs of twin primes smaller than 100.

The Goldbach conjecture

In 1742 a mathematician called Goldbach said that he thought each natural number bigger than 5 was a sum (addition) of three primes, although he thought this was true, he couldn't demonstrate it. This is the reason by which this affirmation is called conjecture and not theorem, a theorem is an affirmation which have to be demonstrated. Until today no one has demonstrated that each natural number (bigger than 5) is sum of three primes, but no one has found a natural number which is not a sum three prime numbers.

Exercise: take seven natural numbers (bigger than 5) and express each of them as sum of three prime numbers, for example

$$\begin{array}{l} 6 = 2 + 2 + 2 \text{ (the primes can be repeated)} \\ 25 = 5 + 3 + 17 \\ 25 = 11 + 7 + 7 \end{array} \left. \vphantom{\begin{array}{l} 6 = 2 + 2 + 2 \\ 25 = 5 + 3 + 17 \\ 25 = 11 + 7 + 7 \end{array}} \right\} \text{ it can be more than one possibility}$$

(If you demonstrate this can't be done, you will have solved a great problem and you will be very famous).