Proof of the Twin primes Conjecture and Goldbach's conjecture

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Abstract

We can find infinite prime numbers with the separation we want and we can express every even number as the sum of two prime numbers.

The function that generates those two prime numbers is:

dn / dx = x ^ (4 / p) -3x ^ (2 / p) +1

Where n is the derivative of order n (which must be a Lucas number) and p is the distance in units of the separation that we want to find.

The relationship between this function and the Lucas numbers is that in the undifferentiated function x ^ (4 / p) -3x ^ (2 / p) +1 it´s zeros are the Lucas numbers.

For example x ^ (4/7) -3x ^ (2/7) + 1 = 0

One of its zeros is 29 which is the 7th number of Lucas

Returning to the matter of primes, if for example we want to find two primes separated by 28 units, the number of units must always be even, since two prime numbers can only be separated by an even number of units).

Well we choose a low Lucas number to start with, for example number 11

The function remains as:

d11 / dx ^ 11 = x ^ (4/28) -3x ^ (2/28) +1

When deriving we obtain the following expression:

d ^ 11 / dx ^ 11 (x ^ (4/28) - 3 x ^ (2/28) + 1) = (2457623025 (552599552 x ^ (1/14) - 1035157325)) / (4049565169664 x ^ (153 / 14))

The number that generates the prime factors separated by 28 units is:

552599552

The factorization is:

2 ^ 20 × 17 × 31 We see that we have not been able to find the two primes with that 28 unit separation.

So we use a larger Lucas number as the order of the derivative.

d18 / dx ^ 18 = x ^ (4/28) -3x ^ (2/28) +1

and we derive

d ^ 18 / dx ^ 18 (x ^ (4/28) - 3 x ^ (2/28) + 1) = - (414998436994058721375 (31421980737536 x ^ (1/14) - 61065476340825)) / (426878854210636742656 x ^ (251/14))

We try the next number that always occupies the same place in the derivative structure.

31421980737536

We factor this number.

2 ^ 34 × 31 × 59

Here we do see that we find the two prime numbers separated by 28 units.

When we do not find the two prime numbers separated the units that we want we always have to raise the order of the derivative in steps that are the Lucas numbers.

I have tried it with high numbers and it seems that there is no problem, which would be to say that there are infinite prime numbers separated the quantity that we want.

But there is still more if we use a higher order for the derivative with the relation of 28 units that we have found before we have:

d ^ 199/199 ^ dx (x ^ (4/28) - 3 x ^ (2/28) + 1) = (12688395083199278333750836565545633207671121735794665586655746055066 81391569882928524594457363424791885662547470022760048340271620007877

41758890517040306869779525989110141253229095149634171948172180559453
92198357356159678162071349303106359021449826194029534243811554126417
27914768600979918771887353020625148812682142610772785039048923057886
01524108685959969614857530137017401372793238747043209863346432095809
7459879354573786258697509765625
(11378553218132909792730765315621736241630136964270298549226367275026
11770640025807226937338157314761609874714361078628305919014214469064
4768699163549295506882564 x ^ (1/14) -
26312135629468867953508236681568662825317913343543901014580013694595
95813611821718432485363842690325103573461608753480422818498348624246
2945694313821863486308669)) /
(12008232830856078349775136751105185851659896003570671399436457096765
69819643246091554655864097412726701839221528055158429419672276914933
20068992082652447740807290746164071953544940
152427231359423930984071251599173568435488974 4384 x ^ (2785/14))

The factorization of that number is:

2 ^ 395 × 31 × 59 × 257 × 271 × 311 × 313 × 353 × 367 × 409 × 479 × 521 × 563 × 577 × 619 × 647 × 661

Where we see that 647 and 619 are 28 units apart (The primes we are looking for are always among the last 4 primes of the factorization).

Which is to say that there are infinite prime numbers with the separation that we want no matter how small and we can express every even number as the sum of two prime numbers.