MERGING THE GOLDBACH AND THE BUNYAKOVSKY CONJECTURE INTO A UNIFIED PRIME AXIOM OF SECOND-ORDER LOGIC AND INVESTIGATING MUCH BEYOND THE GOLDBACH'S CONJECTURE AND THE PRIME NUMBER THEOREM.

ALEXIS ZAGANIDIS

Abstract. Merging the Goldbach and the Bunyakovsky conjecture into a Unified Prime Axiom of second-order logic and investigating much beyond the Goldbach's conjecture and the prime number theorem.

1. The Unified Prime Axiom of Second-Order Logic.

Merging the Goldbach and the Bunyakovsky conjecture into a Unified Prime Axiom of second-order logic relying on the assumption of the perfect randomness of the arbitrary large prime k-tuple numbers :

Definition 00 : The Constellations Set S_T of the prime k-tuples:

(1)
$$S_T = \{T - Min\,(T) : T \; is \; k - tuple \; such \; that \; \# \{n : n + T \; are \; all \; primes\} > 1\}\,.$$

Definition 01 : A sequence $S_X = ((1, X_1), (2, X_2), ... (N, X_N), ...)$ is a Z-sequence if and only if the sequence S_X is recursively computable by an algorithm and the sequence S_X contains an arbitrary large number of different primes with their indexes being also prime numbers.

Definition 02 : The Z-sequences of the set $A_Z = \left\{S_X^1, S_X^2, ..., S_X^N\right\}$ are independent if and only if there is a partition P_Z of the set A_Z such that for all pairs of Z-sequences with $S_X \in A \in P$ and with $S_Y \in B \in P$,

$$A = B$$

or

$$\lim_{n \to +\infty} X(n)/Y(n) = +\infty$$

or

$$\lim_{n \to +\infty} X(n)/Y(n) = 0$$

, and such that for all elements $A \in P$ of the partition P, we have the following inequality :

Date: March 22, 2024.

$$(2) \qquad \#\left\{n : Sort\left(A_n\right) - Min\left(A_n\right) \notin S_T\right\} < +\infty$$

Unified Axiom 00 : A linear transformation $a \times S_X + b$ of a Z-sequences S_X, is a Z-sequences if and only if a and b are co-primes and their product $a \times b$ is even. Therefore it is a Unified Axiom on arithmetic progressions.

Unified Axiom 01 : N independent Z-sequences, merged into a N-tuple sequence, contains an arbitrary large number of N-tuples containing N elements that are all prime k-tuples with their indexes being also prime k-tuple numbers.

Unified Axiom 02 : Let be a function f being a 2-dimensional function such that $g(n) = f(n, b)$ is a Z-sequence for almost all prime values of the argument b, and such that $h(n) = f(a, n)$ is a Z-sequence for almost all prime values of the argument a.

The sequence $f(X(n), Y(n))$ is a Z-sequence if X and Y are both Z-sequences such that

$$\lim_{n \to +\infty} X(n)/Y(n) \neq 1.$$

Unified Axiom 03 : Let be the function f being a 2-dimensional function such that $g(n) = f(n, b)$ is a Z-function for almost all prime values of the argument b, and such that $h(n) = f(a, n)$ is a Z-function for almost all prime values of the argument a.

Let be the sequences X and Y being both Z-sequences. Then, there is only a finite number of values N such that $f(N - X(b), Y(b))$ is not a prime k-tuple for any prime k-tuple values of b.

Comments 01 : The Dirichlet's theorem is a partial complicate proof of the Unified Axiom 00.

Comments 02 : The Chen's theorem is a partial complicate proof of the Unified Axiom 03.

Comments 03 : The Goldbach's conjecture, the Dubner's conjecture and the Full Zaganidis' conjecture (see below) are included inside the Unified Axiom 03. By using recursively the Unified Axiom 02 from the initial Unified Axiom 00 on arithmetic progressions, the Bunyakovsky's conjecture is included inside the Unified

Axiom 02. The generalized Bunyakovsky's conjecture is included inside the Unified Axiom 01.

2. Beyondness of the Goldbach's Conjecture.

There is 3 670 counter examples (0 and 2 included) of the Goldbach's conjecture extended to the prime triplets (the Goldbach's conjecture has 2 counter examples as 0 and 2, and the Dubner's conjecture has 36 counter examples including 0 and 2).

The plot of the 3 670 counter examples of the Goldbach's conjecture extended to the prime triplet numbers, shows a smooth logarithm divergence between 0 and $7\ 400\ 384 = 2^6 \times 115631$ driven by the perfect randomness of the arbitrary large prime triplet numbers.

The plot of the 36 counter examples of the Goldbach's conjecture extended to the prime doublet numbers, does not show a smooth logarithm divergence between 0 and $4\ 208 = 2^4 \times 363$ driven by the perfect randomness of the arbitrary large prime doublet numbers.

Both numbers 4 208 and 7 400 384 can not be written as THREE squares.

The plot of the 40 382 counter examples of the Goldbach's conjecture extended to the sum of a prime doublet and a left prime triplet, roughly shows a smooth logarithm divergence between 0 and $40\ 382 = 2 \times 61 \times 331$ driven by the perfect randomness of the arbitrary large prime doublet & left triplet numbers.

The plot of the 40 384 counter examples of the Goldbach's conjecture extended to the sum of a prime doublet and a center prime triplet, roughly shows a smooth logarithm divergence between 0 and $40\ 384 = 2^6 \times 631$ driven by the perfect randomness of the arbitrary large prime doublet & center triplet numbers.

The plot of the 40 388 counter examples of the Goldbach's conjecture extended to the sum of a prime doublet and a right prime triplet, roughly shows a smooth logarithm divergence between 0 and $40\ 388 = 2^2 \times 23 \times 439$ driven by the perfect randomness of the arbitrary large prime doublet & right triplet numbers.

The Full Zaganidis' Conjecture : every even number strictly greater than 2, 4, 6, 62, 68, 788, 908, 4 208, 40 382, 40 384, 40 388 and 7 400 384 is the sum of a P+P, P+D, P+T, P+LT, P+RT, D+T, P+CT, D+D, D+LT, D+CT, D+RT, T+T (P = Prime number, D = Prime Doublet, T= Prime Triplet, LT = Left Prime Triplet , CT = Center Prime Triplet, RT = Triplet Prime Right).

The Full Zaganidis' Conjecture : every even number is the sum of a P+P, P+D, P+T, P+LT, P+RT, D+T, P+CT, D+D, D+LT, D+CT, D+RT, T+T except for 2, 3, 4, 5, 8, 6, 6, 36, 121, 135, 124 and 3 670 counter-examples. (P = Prime number, D = Prime Doublet, T= Prime Triplet, LT = Left Prime Triplet , CT =

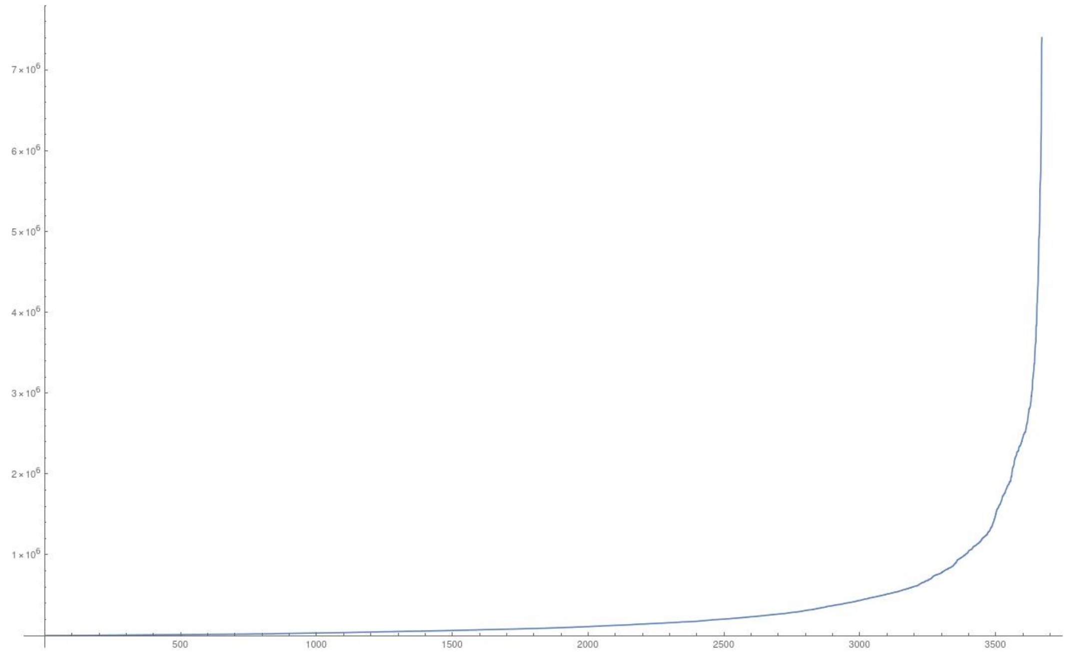

FIGURE 1. Goldbach's conjecture extended to the prime triplets. The abscissa is the n-th counter example and the ordinate is its value.

Center Prime Triplet, RT = Triplet Prime Right).

Since the left prime doublets (left prime twins or LD) are congruent 5 modulo 6 and the right prime doublets (right prime twins or RD) are congruent 1 modulo 6, there are an infinite number of counter-examples for the following prime conjectures : P+LD and P+RD. The asymptotic density of the counter-examples is 1/6. The none-asymptomatic density of the counter-examples is strictly lower than 1/6 since the even numbers of the form $3 + LD$ and $3 + RD$ have a vanishing asymptomatic density.

A much more detailed Goldbach's conjecture can be done about the total number of prime couples for every even number being the sum of a P+P :

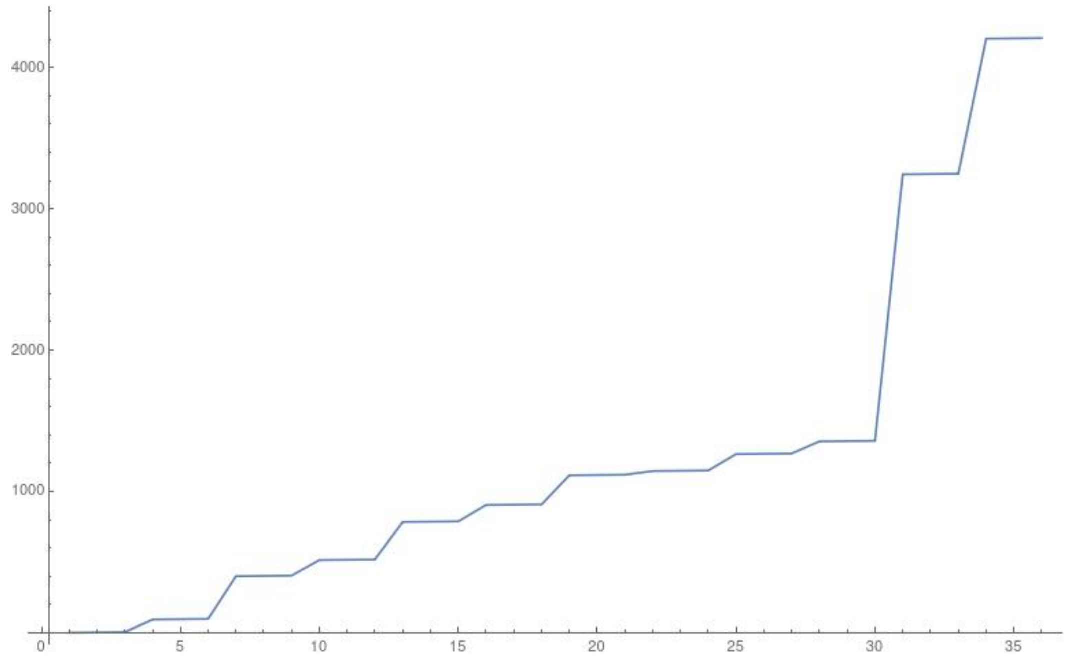

FIGURE 2. Goldbach's conjecture extended to the prime doublets (Dubner Conjecture). The abscissa is the n-th counter example and the ordinate is its value.

$$X_{\#(Goldbach)}(N) = \#\left\{(p1, p2) : 2N = p1 + p2\right\} \tag{3}$$

$$\lim_{n\to N} \inf_{M>N} \frac{Log\left(X_{\#(Goldbach)}(M)\right)}{M} = \frac{2}{3} \tag{4}$$

$$\lim_{n\to N} \sup_{M>N} \frac{Log\left(X_{\#(Goldbach)}(M)\right)}{M} = \frac{\pi}{4} \tag{5}$$

$$\forall N \inf_{M>N} \frac{Log\left(X_{\#(Goldbach)}(M)\right)}{M} < \frac{2}{3} \tag{6}$$

$$\forall N \sup_{M>N} \frac{Log\left(X_{\#(Goldbach)}(M)\right)}{M} < \frac{\pi}{4} \tag{7}$$

(8)

3. Beyondness of the Prime Number Theorem.

The asymptotic behavior of the prime-counting function $\pi(x)$ of the prime numbers can be describe much more accurately than the Prime Number Theorem with the following advanced formula:

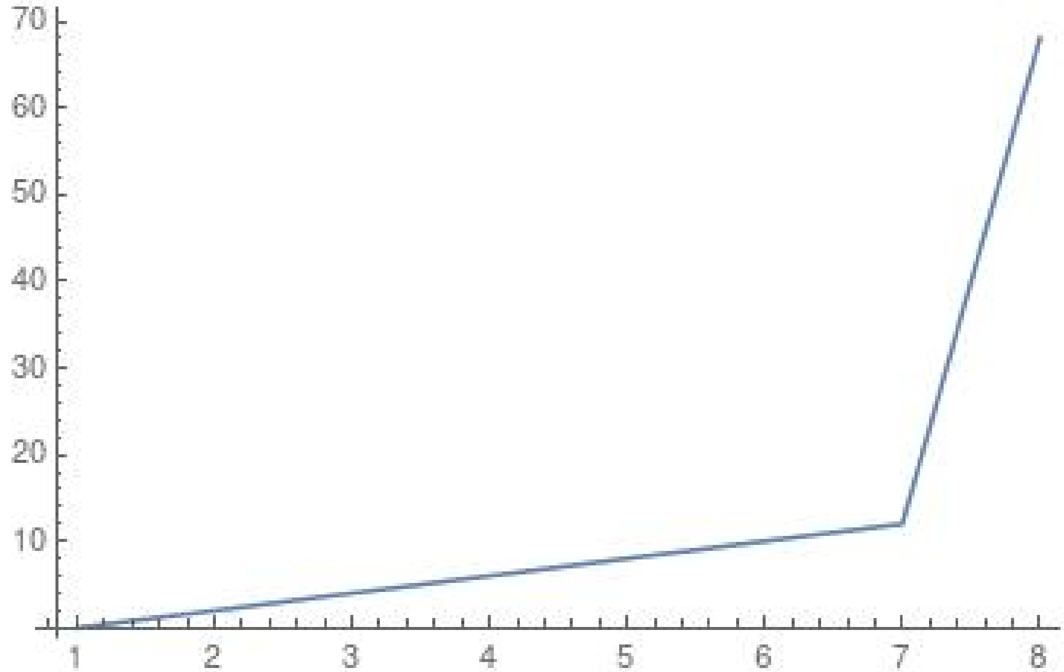

FIGURE 3. Goldbach's conjecture extended to the sum of a prime and a right prime triplet. The abscissa is the n-th counter example and the ordinate is its value.

(9)

$$\pi(x) = Li(x) - Li(2) - \frac{1}{8}Log(n)^{Log(2)\sqrt{Log(n)}} + \frac{1}{8}Log(2)^{Log(2)^{3/2}} + 1 + \delta\pi(x)$$

(10)

$$\Delta\pi(x) = \pi(x) - Li(x) + Li(2) + \frac{1}{8}Log(n)^{Log(2)\sqrt{Log(n)}} - \frac{1}{8}Log(2)^{Log(2)^{3/2}} - 1$$

By taking the following interval $x \in \left[10^{10}, 10^{10} + 10^4\right]$, the standard deviation of the increment of the prime-counting function is

$$VAR(NextPrime(Prime(\pi(x))) - Prime(\pi(x))) = 42.964$$

while the mean of the increment of the prime-counting function is

$$\langle NextPrime(Prime(\pi(x))) - Prime(\pi(x))\rangle = 54.5171.$$

Therefore, we should expect the following values for the asymptotic distribution error function $\Delta\pi(x)$:

(11)

$$\Delta\pi\left(N = 10^{10}\right) \sim \sqrt{\frac{N \times VAR(NextPrime(Prime(\pi(x))) - Prime(\pi(x)))}{2}} = 1.78718 \times 10^7$$

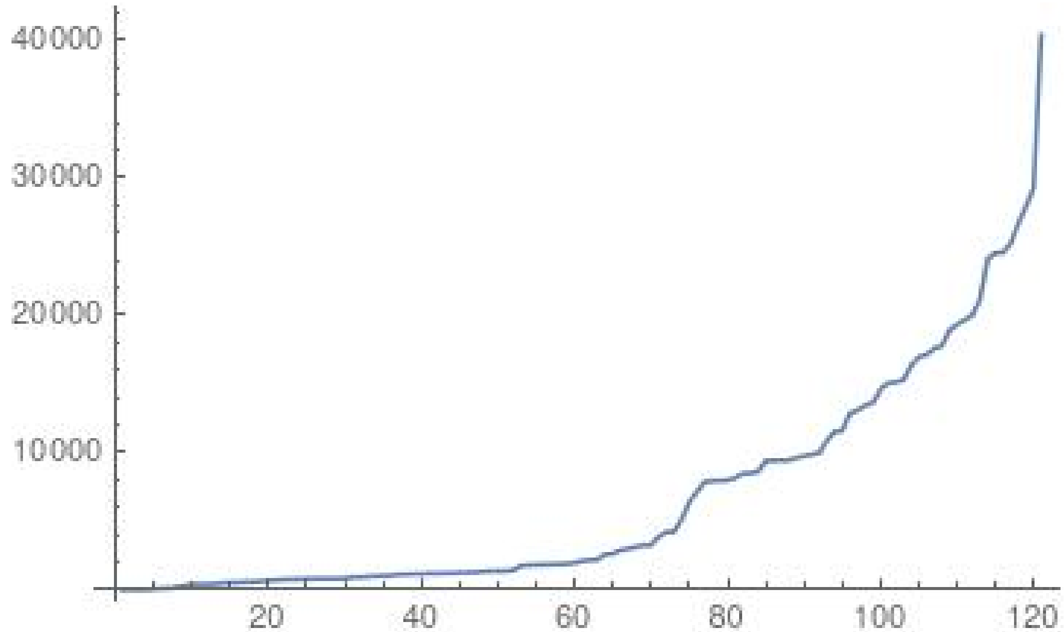

FIGURE 4. Goldbach's conjecture extended to the sum of a prime doublet and a right prime triplet. The abscissa is the n-th counter example and the ordinate is its value.

It points out to the following Prime Paradox, the perfect randomness of the arbitrary large prime numbers is too perfect and too close to the advanced asymptotic prime-counting error function since its deviation is only few thousands about instead of an expected deviation of few millions about.

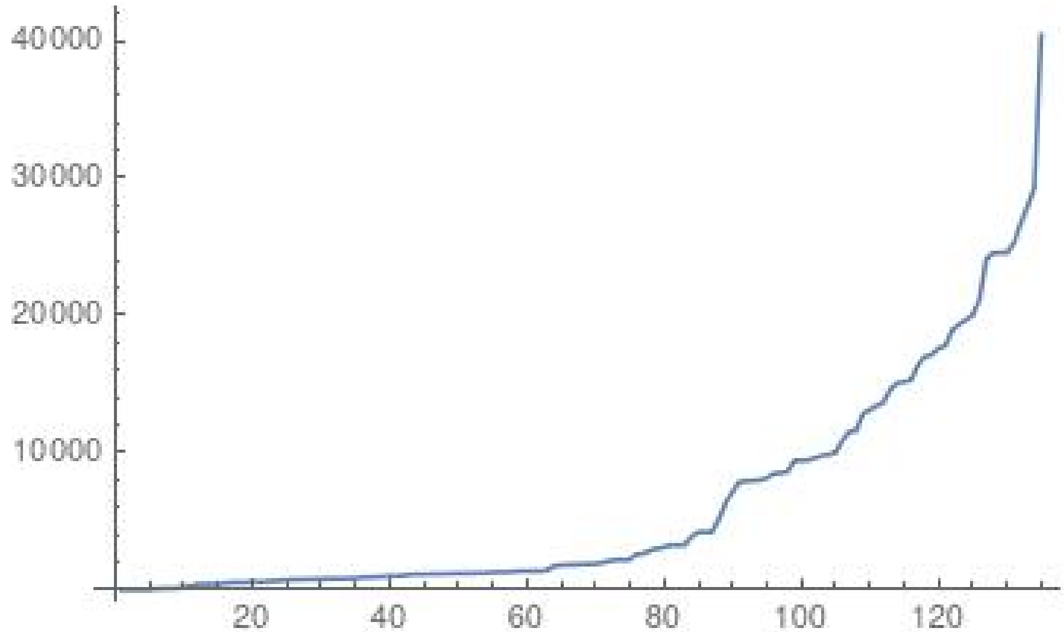

FIGURE 5. Goldbach's conjecture extended to the sum of a prime doublet and a left prime triplet. The abscissa is the n-th counter example and the ordinate is its value.

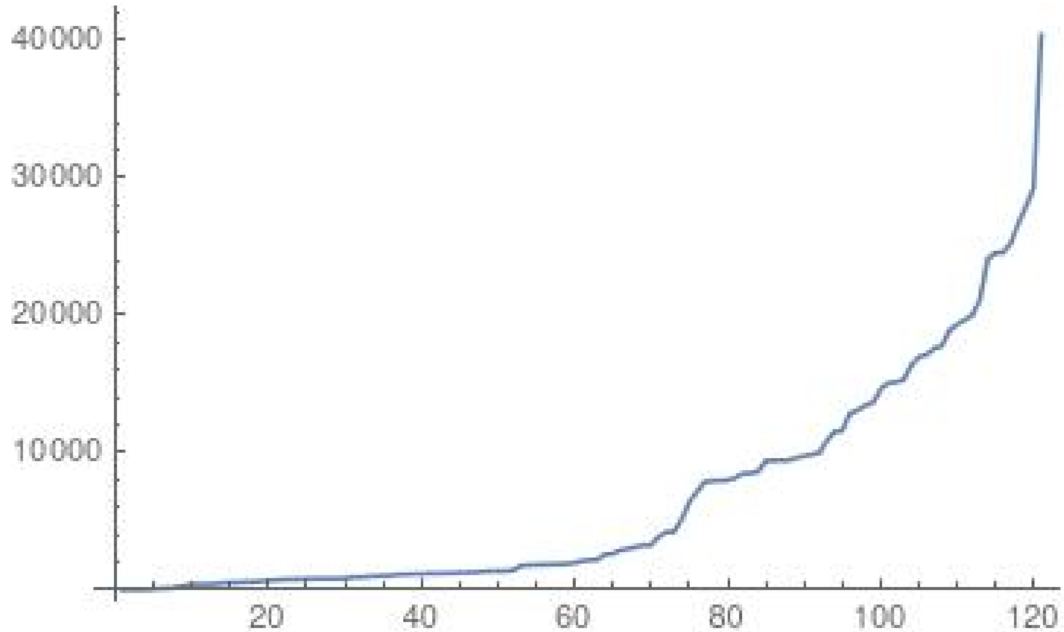

FIGURE 6. Goldbach's conjecture extended to the sum of a prime doublet and a center prime triplet. The abscissa is the n-th counter example and the ordinate is its value.

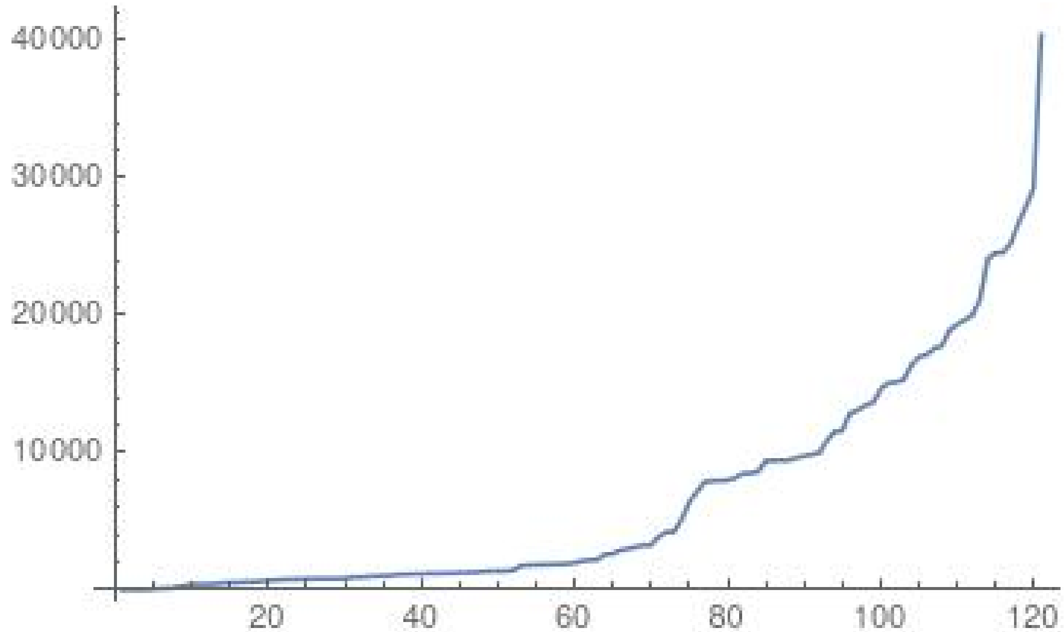

FIGURE 7. Goldbach's conjecture extended to the sum of a prime doublet and a right prime triplet. The abscissa is the n-th counter example and the ordinate is its value.

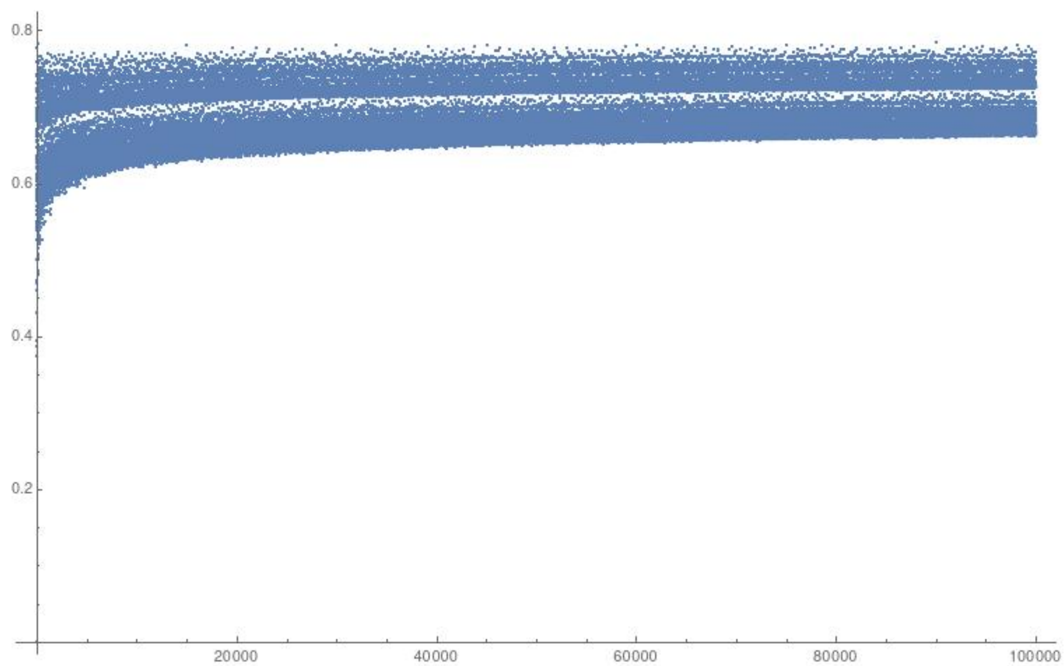

FIGURE 8. Plot of the Sequence $X_{\#(Goldbach)}(N)$.

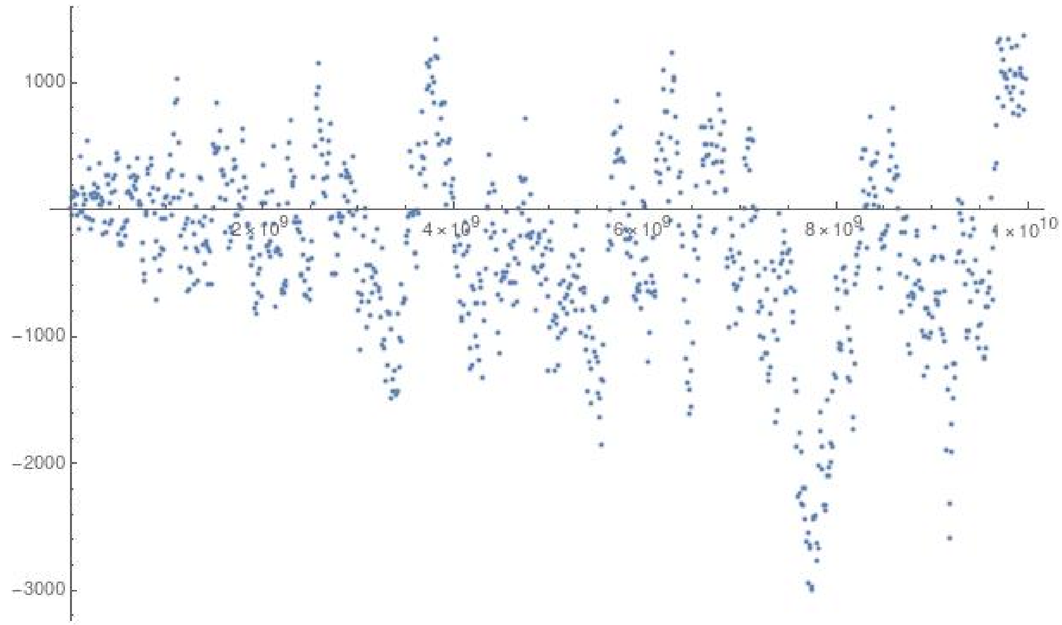

FIGURE 9. Plot of the advanced asymptotic prime-counting error function $\Delta\pi(x)$ of the prime numbers between 0 and 10^{10} using steps equal to 10^7.

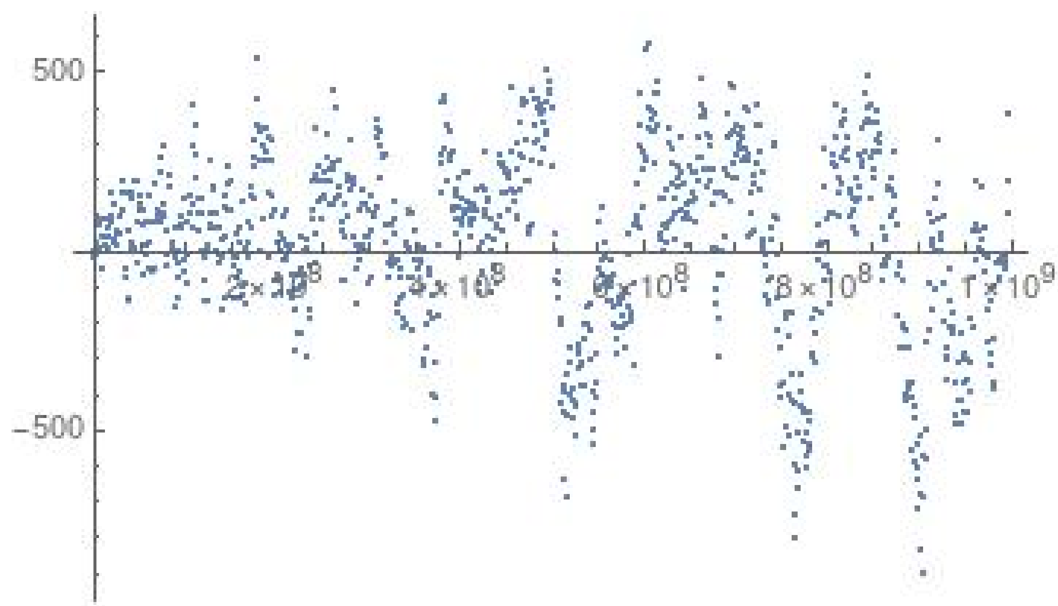

FIGURE 10. Plot of the advanced asymptotic prime-counting error function $\Delta\pi(x)$ of the prime numbers between 0 and 10^9 using steps equal to 10^6.

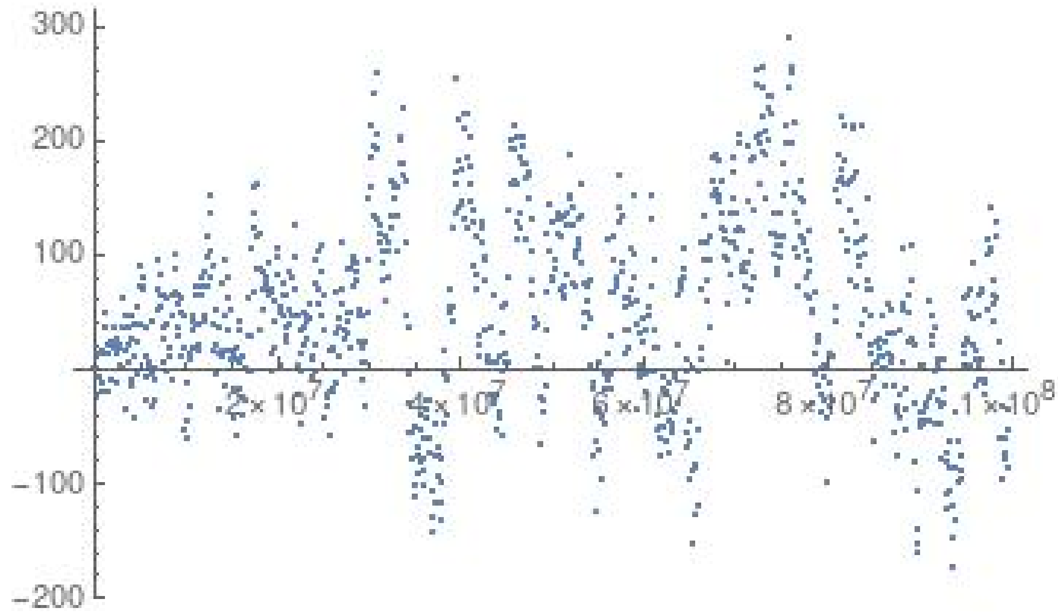

FIGURE 11. Plot of the advanced asymptotic prime-counting error function $\Delta\pi(x)$ of the prime numbers between 0 and 10^8 using steps equal to 10^6.

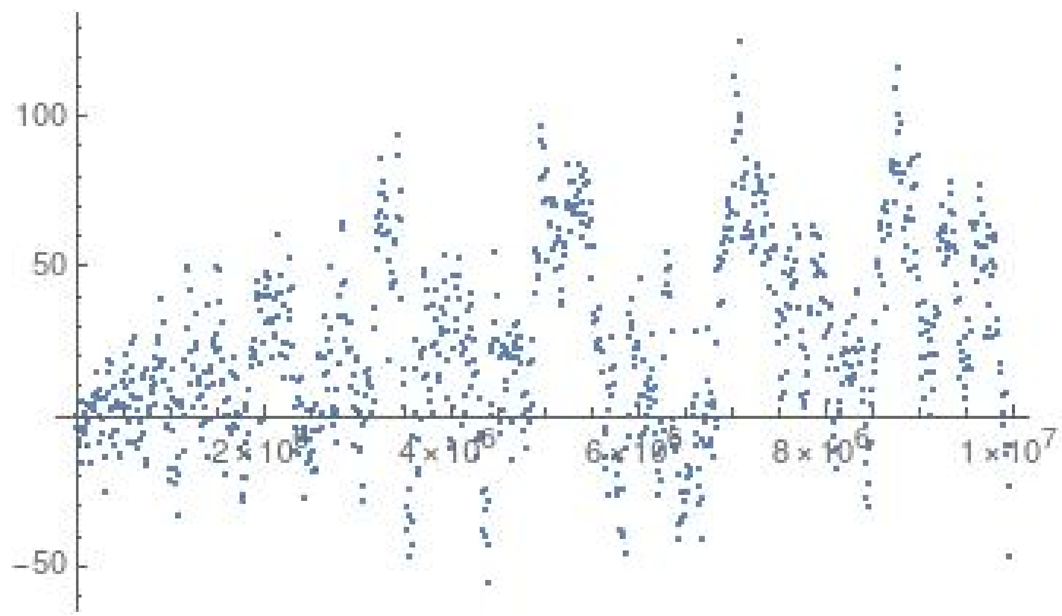

FIGURE 12. Plot of the advanced asymptotic prime-counting error function $\Delta\pi(x)$ of the prime numbers between 0 and 10^7 using steps equal to 10^4.

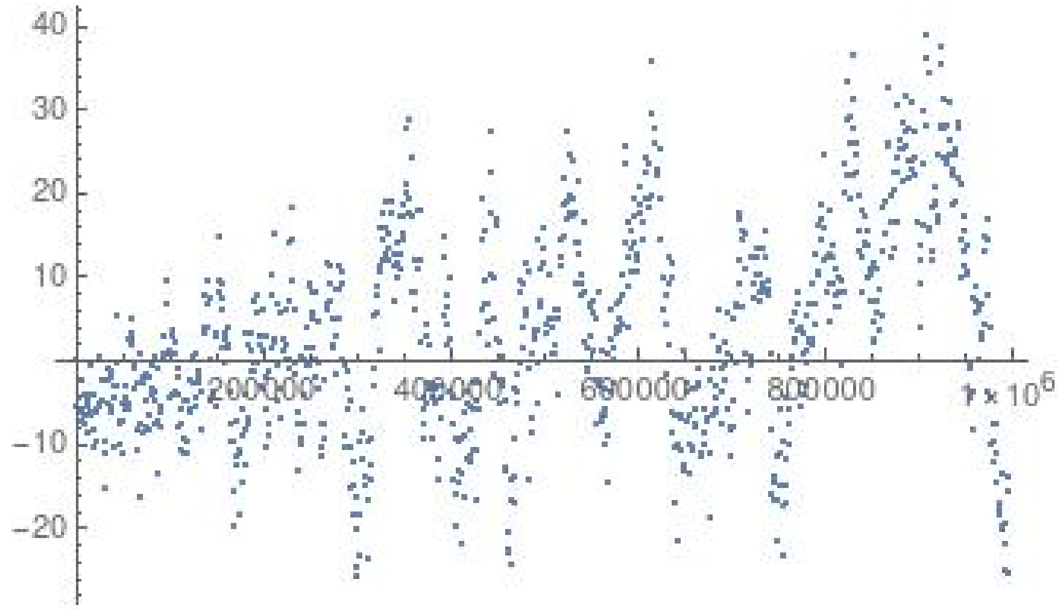

Figure 13. Plot of the advanced asymptotic prime-counting error function $\Delta\pi(x)$ of the prime numbers between 0 and 10^6 using steps equal to 10^3.

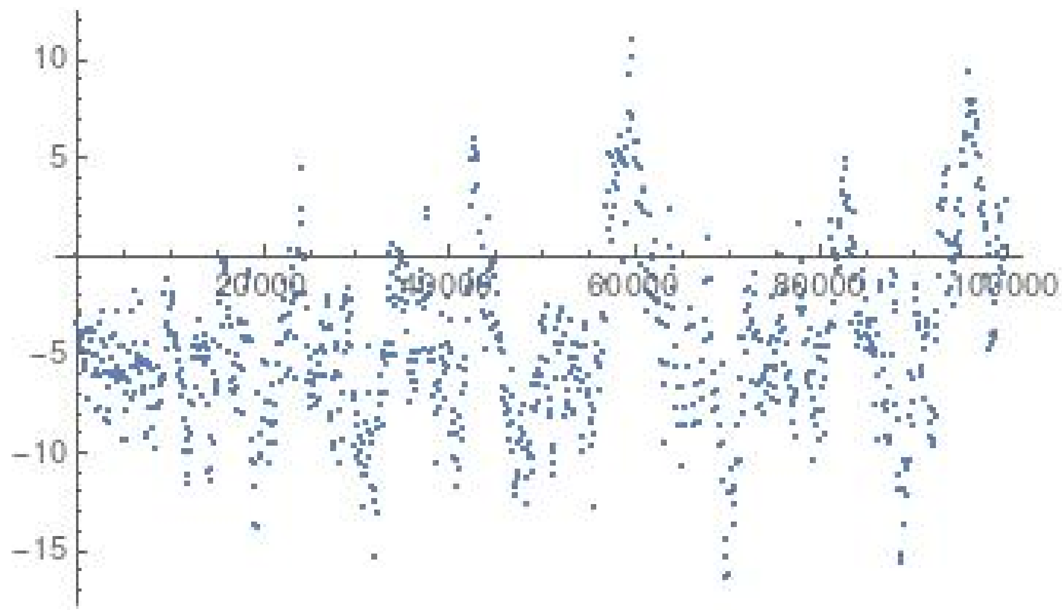

Figure 14. Plot of the advanced asymptotic prime-counting error function $\Delta\pi(x)$ of the prime numbers between 0 and 10^5 using steps equal to 10^2.

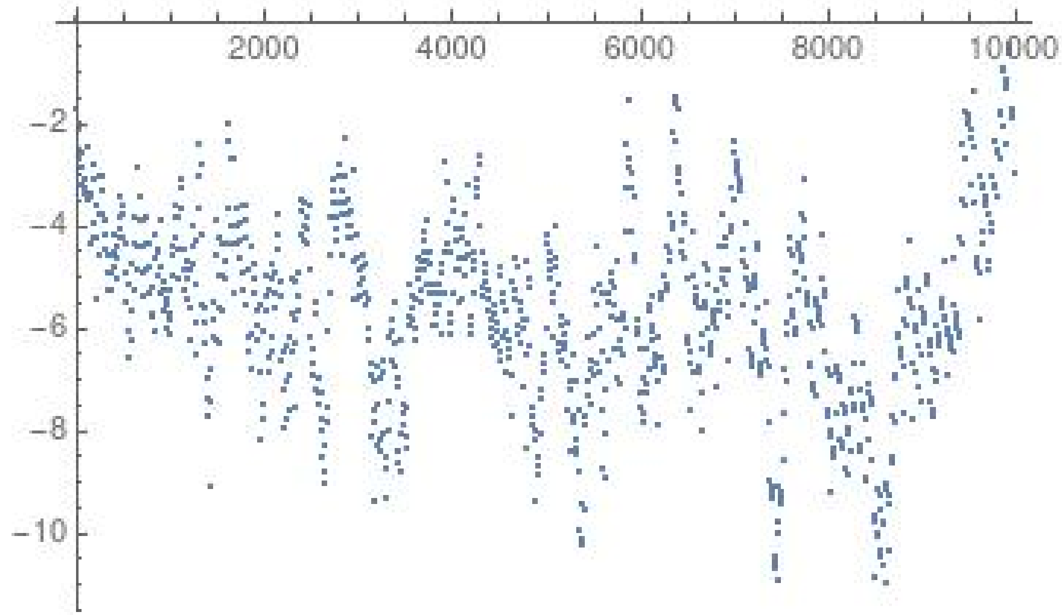

FIGURE 15. Plot of the advanced asymptotic prime-counting error function $\Delta\pi(x)$ of the prime numbers between 0 and 10^4 using steps equal to 10^1.

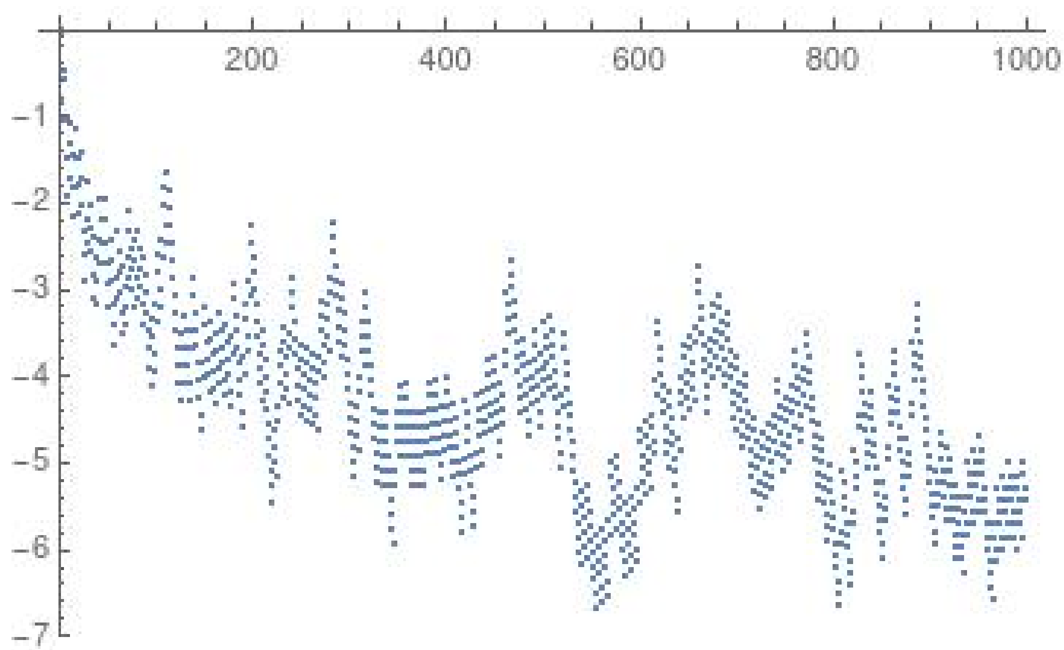

FIGURE 16. Plot of the advanced asymptotic prime-counting error function $\Delta\pi(x)$ of the prime numbers between 0 and 10^3 using steps equal to 10^0.

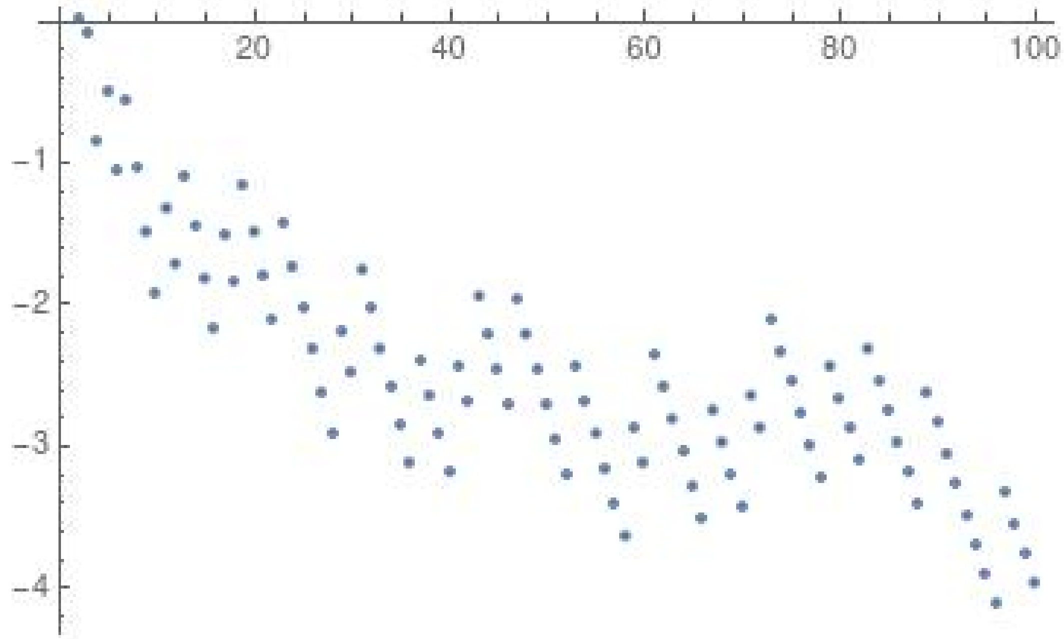

FIGURE 17. Plot of the advanced asymptotic prime-counting error function $\Delta\pi(x)$ of the prime numbers between 0 and 10^2 using steps equal to 10^0.

References

[1] A. Zaganidis, "Mathematica Notebooks, Pictures and Source Files : Merging the Goldbach and the Bunyakovsky Conjecture into a Unified Prime Axiom of Second-Order Logic and Investigating Much Beyond the Goldbach's Conjecture and the Prime Number Theorem." https://drive.google.com/drive/folders/1J7_12IMoRCS5WzBxy7oMNfKZpA_6o-S_?usp=sharing.

[2] Wikipedia. https://en.wikipedia.org/wiki/Sequent_calculus.

[3] Wikipedia. https://en.wikipedia.org/wiki/Second-order_logic.

[4] Wikipedia. https://en.wikipedia.org/wiki/Axiom.

[5] Wikipedia. https://en.wikipedia.org/wiki/Randomness.

[6] Wikipedia. https://en.wikipedia.org/wiki/Goldbach%27s_conjecture.

[7] Wikipedia. https://en.wikipedia.org/wiki/Harvey_Dubner.

[8] Wikipedia. https://en.wikipedia.org/wiki/Dirichlet%27s_theorem_on_arithmetic_progressions.

[9] Wikipedia. https://en.wikipedia.org/wiki/Bunyakovsky_conjecture.

[10] Wikipedia. https://en.wikipedia.org/wiki/Schinzel%27s_hypothesis_H.

[11] Wikipedia. https://en.wikipedia.org/wiki/Prime_k-tuple.

[12] Wikipedia. https://en.wikipedia.org/wiki/Almost_prime.

[13] Wikipedia. https://en.wikipedia.org/wiki/Coprime_integers.

[14] Wikipedia. https://en.wikipedia.org/wiki/Congruence.

[15] Wikipedia. https://en.wikipedia.org/wiki/Sequence.

[16] Wikipedia. https://en.wikipedia.org/wiki/Limit_inferior_and_limit_superior.

[17] Wikipedia. https://en.wikipedia.org/wiki/Chen's_theorem.

[18] Wikipedia. https://en.wikipedia.org/wiki/Chen_Jingrun.

[19] T. Yamada, "Explicit chen's theorem," 2015.

[20] Wikipedia. https://en.wikipedia.org/wiki/Prime_number_theorem.

[21] Wikipedia. https://en.wikipedia.org/wiki/Prime-counting_function.

[22] Wikipedia. https://en.wikipedia.org/wiki/Asymptotic_analysis.

[23] Wikipedia. https://en.wikipedia.org/wiki/Random_walk.

[24] Wikipedia. https://en.wikipedia.org/wiki/Variance.

[25] Wikipedia. https://en.wikipedia.org/wiki/Mean.

4. Appendixes

The 2 counter examples (0 and 2 included) of the Goldbach's conjecture : $\{0, 2\}$.

The 3 counter examples (0 and 2 included) of the Goldbach's conjecture extended to the sum of a prime and a prime doublet: $\{0, 2, 4\}$.

The 4 counter examples (0 and 2 included) of the Goldbach's conjecture extended to the sum of a prime and a prime triplet: $\{0, 2, 4, 6\}$.

The 5 counter examples (0 and 2 included) of the Goldbach's conjecture extended to the sum of a prime and a left prime triplet: $\{0, 2, 4, 6, 62\}$.

The 8 counter examples (0 and 2 included) of the Goldbach's conjecture extended to the sum of a prime and a right prime triplet: $\{0, 2, 4, 6, 8, 10, 12, 68\}$.

The 6 counter examples (0 and 2 included) of the Goldbach's conjecture extended to the sum of a prime doublet and a prime triplet: $\{0, 2, 4, 6, 400, 788\}$.

The 6 counter examples (0 and 2 included) of the Goldbach's conjecture extended to the sum of a prime and a center prime triplet: $\{0, 2, 4, 6, 8, 908\}$.

The 36 counter examples (0 and 2 included) of the Goldbach's conjecture extended to the sum of a prime doublet and a prime doublet:

$$\{0, 2, 4, 94, 96, 98, 400, 402, 404, 514, 516, 518, 784, 786, 788, \tag{12}$$
$$904, 906, 908, 1114, 1116, 1118, 1144, 1146, 1148, 1264, 1266, 1268, \tag{13}$$
$$1354, 1356, 1358, 3244, 3246, 3248, 4204, 4206, 4208\} \tag{14}$$

The 121 counter examples (0 and 2 included) of the Goldbach's conjecture extended to the sum of a prime and a left prime triplet :

$$\{0, 2, 4, 6, 62, 92, 94, 182, 272, 394, 396, 398, 400, 482, 512, 514, \tag{15}$$
$$554, 556, 602, 662, 692, 734, 736, 754, 776, 782, 784, 786, 788, 802, \tag{16}$$
$$902, 904, 944, 976, 998, 1010, 1112, 1114, 1142, 1144, 1178, 1180, \tag{17}$$
$$1186, 1208, 1216, 1262, 1264, 1322, 1352, 1354, 1364, 1412, 1742, \tag{18}$$
$$1784, 1808, 1816, 1838, 1850, 1864, 1952, 2074, 2162, 2164, 2582, \tag{19}$$
$$2624, 2872, 3002, 3082, 3242, 3244, 3842, 4202, 4204, 5102, 6362, \tag{20}$$
$$7114, 7832, 7910, 7928, 7970, 8122, 8462, 8504, 8594, 9370, 9400, \tag{21}$$
$$9402, 9404, 9602, 9722, 9844, 9974, 10850, 11510, 11582, 12814, \tag{22}$$
$$13082, 13400, 13612, 14594, 15040, 15124, 15260, 16312, 16954, 17102, \tag{23}$$
$$17560, 17744, 18890, 19298, 19634, 20012, 21104, 24094, 24530, 24532, \tag{24}$$
$$25216, 26648, 27908, 29294, 40382\} \tag{25}$$

The 135 counter examples (0 and 2 included) of the Goldbach's conjecture extended to the sum of a prime and a center prime triplet :

$$\{0, 2, 4, 6, 8, 64, 94, 96, 98, 184, 274, 398, 400, 402, 404, 484, \tag{26}$$
$$514, 516, 518, 556, 558, 560, 604, 664, 694, 736, 738, 740, 758, 778, \tag{27}$$
$$784, 786, 788, 790, 806, 904, 906, 908, 946, 980, 1000, 1012, 1114, \tag{28}$$
$$1116, 1118, 1144, 1146, 1148, 1180, 1182, 1184, 1190, 1210, 1220, \tag{29}$$
$$1264, 1266, 1268, 1324, 1354, 1356, 1358, 1366, 1414, 1744, 1786, \tag{30}$$
$$1810, 1820, 1840, 1852, 1868, 1954, 2078, 2164, 2166, 2168, 2584, \tag{31}$$
$$2626, 2876, 3004, 3086, 3244, 3246, 3248, 3844, 4204, 4206, 4208, \tag{32}$$
$$5104, 6364, 7118, 7834, 7912, 7930, 7972, 8126, 8464, 8506, 8596, \tag{33}$$
$$9374, 9404, 9406, 9604, 9724, 9848, 9976, 10852, 11512, 11584, 12818, \tag{34}$$
$$13084, 13402, 13616, 14596, 15044, 15128, 15262, 16316, 16958, 17104, \tag{35}$$
$$17564, 17746, 18892, 19300, 19636, 20014, 21106, 24098, 24532, 24534, \tag{36}$$
$$24536, 25220, 26650, 27910, 29296, 40384\} \tag{37}$$

The 124 counter examples (0 and 2 included) of the Goldbach's conjecture extended to the sum of a prime and a right prime triplet :

$$\{0, 2, 4, 6, 8, 10, 12, 68, 98, 100, 188, 278, 400, 402, 404, 406, \tag{38}$$

$$488, 518, 520, 560, 562, 608, 668, 698, 740, 742, 760, 782, 788, 790, \tag{39}$$

$$792, 794, 808, 908, 910, 950, 982, 1004, 1016, 1118, 1120, 1148, \tag{40}$$

$$1150, 1184, 1186, 1192, 1214, 1222, 1268, 1270, 1328, 1358, 1360, \tag{41}$$

$$1370, 1418, 1748, 1790, 1814, 1822, 1844, 1856, 1870, 1958, 2080, \tag{42}$$

$$2168, 2170, 2588, 2630, 2878, 3008, 3088, 3248, 3250, 3848, 4208, \tag{43}$$

$$4210, 5108, 6368, 7120, 7838, 7916, 7934, 7976, 8128, 8468, 8510, \tag{44}$$

$$8600, 9376, 9406, 9408, 9410, 9608, 9728, 9850, 9980, 10856, 11516, \tag{45}$$

$$11588, 12820, 13088, 13406, 13618, 14600, 15046, 15130, 15266, 16318, \tag{46}$$

$$16960, 17108, 17566, 17750, 18896, 19304, 19640, 20018, 21110, 24100, \tag{47}$$

$$24536, 24538, 25222, 26654, 27914, 29300, 40388\} \tag{48}$$

The 3 670 counter examples (0 and 2 included) of the Goldbach's conjecture extended to the prime triplets :

(49) $\{0, 2, 4, 6, 8, 68, 98, 100, 158, 162, 166, 188, 190, 192, 224, 254,$

(50) $278, 402, 406, 434, 436, 438, 440, 442, 488, 492, 496, 518, 520, 522,$

(51) $526, 556, 602, 604, 606, 608, 610, 612, 616, 644, 668, 672, 674, 676,$

(52) $704, 736, 758, 762, 766, 782, 786, 788, 790, 792, 794, 796, 798, 800,$

(53) $802, 822, 824, 854, 856, 908, 912, 916, 946, 998, 1002, 1004, 1006,$

(54) $1008, 1010, 1030, 1032, 1034, 1036, 1038, 1040, 1042, 1064, 1066,$

(55) $1118, 1122, 1126, 1148, 1150, 1152, 1156, 1186, 1214, 1218, 1220,$

(56) $1222, 1242, 1244, 1246, 1248, 1250, 1252, 1268, 1270, 1272, 1274,$

(57) $1276, 1328, 1332, 1336, 1358, 1360, 1362, 1366, 1418, 1422, 1424,$

(58) $1426, 1568, 1570, 1572, 1576, 1634, 1664, 1694, 1696, 1748, 1752,$

(59) $1756, 1784, 1814, 1816, 1818, 1822, 1844, 1848, 1852, 1870, 1906,$

(60) $1936, 1994, 1996, 2024, 2028, 2032, 2054, 2056, 2082, 2084, 2114,$

(61) $2168, 2172, 2176, 2206, 2264, 2294, 2298, 2326, 2354, 2410, 2412,$

(62) $2416, 2446, 2504, 2536, 2564, 2624, 2628, 2630, 2632, 2656, 2746,$

(63) $2836, 2924, 2956, 3044, 3048, 3050, 3052, 3076, 3134, 3138, 3142,$

(64) $3166, 3194, 3196, 3248, 3250, 3252, 3284, 3316, 3342, 3344, 3346,$

(65) $3374, 3376, 3404, 3406, 3408, 3412, 3460, 3586, 3614, 3644, 3704,$

(66) $3796, 3826, 3916, 3974, 4034, 4064, 4066, 4184, 4208, 4210, 4212,$

(67) $4214, 4216, 4336, 4364, 4368, 4372, 4394, 4398, 4402, 4418, 4422,$

(68) $4424, 4426, 4428, 4432, 4454, 4456, 4484, 4576, 4604, 4606, 4608,$

(69) $4612, 4634, 4638, 4640, 4694, 4726, 4784, 4814, 4818, 4846, 4874,$

(70) $4964, 4994, 5024, 5052, 5054, 5056, 5058, 5062, 5108, 5112, 5114,$

(71) $5116, 5176, 5188, 5204, 5266, 5288, 5292, 5296, 5354, 5358, 5360,$

(72) $5362, 5384, 5476, 5564, 5624, 5686, 5864, 5866, 5896, 5978, 5980,$

(73) $5982, 5986, 6040, 6042, 6046, 6074, 6106, 6134, 6284, 6344, 6348,$

(74) $6352, 6374, 6404, 6408, 6410, 6434, 6438, 6440, 6442, 6444, 6464,$

(75) $6494, 6496, 6498, 6676, 6704, 6706, 6736, 6764, 6768, 6772, 6794,$

(76) $6974, 6978, 6980, 7006, 7064, 7122, 7124, 7126, 7154, 7156, 7158,$

(77) $7162, 7276, 7334, 7338, 7366, 7394, 7396, 7426, 7454, 7512, 7516\}$

(78) {7542, 7544, 7546, 7548, 7552, 7576, 7606, 7724, 7754, 7786, 7876,

(79) 7904, 7908, 7912, 7936, 7964, 7966, 7968, 7972, 8018, 8020, 8022,

(80) 8026, 8054, 8058, 8062, 8086, 8174, 8178, 8204, 8264, 8356, 8380,

(81) 8382, 8386, 8408, 8412, 8416, 8474, 8536, 8592, 8596, 8624, 8626,

(82) 8686, 8714, 8718, 8722, 8774, 8804, 8806, 8808, 8812, 8834, 8838,

(83) 8842, 8864, 8954, 8984, 8986, 9134, 9136, 9196, 9218, 9222, 9224,

(84) 9226, 9256, 9524, 9556, 9646, 9674, 9676, 9704, 9764, 9796, 9824,

(85) 9852, 9854, 9856, 9858, 9916, 9944, 9974, 10034, 10038, 10040, 10042,

(86) 10064, 10066, 10068, 10124, 10128, 10132, 10184, 10186, 10188, 10192,

(87) 10216, 10244, 10246, 10248, 10306, 10396, 10426, 10484, 10512, 10514,

(88) 10516, 10598, 10600, 10602, 10604, 10606, 10636, 10694, 10698, 10702,

(89) 10754, 10814, 10844, 10848, 10852, 10876, 10904, 10906, 10934, 10936,

(90) 11020, 11022, 11024, 11026, 11056, 11086, 11112, 11114, 11116, 11146,

(91) 11234, 11264, 11266, 11324, 11378, 11380, 11382, 11386, 11444, 11446,

(92) 11498, 11500, 11502, 11504, 11506, 11508, 11510, 11532, 11534, 11536,

(93) 11566, 11588, 11590, 11592, 11594, 11596, 11624, 11648, 11650, 11652,

(94) 11656, 11684, 11768, 11772, 11776, 11828, 11954, 11986, 12014, 12106,

(95) 12188, 12190, 12192, 12196, 12256, 12286, 12368, 12372, 12374, 12376,

(96) 12496, 12524, 12554, 12556, 12558, 12562, 12582, 12584, 12586, 12674,

(97) 12764, 12766, 12768, 12772, 12792, 12796, 12822, 12824, 12826, 12828,

(98) 12832, 12884, 12910, 12912, 12916, 13002, 13004, 13154, 13158, 13214,

(99) 13246, 13304, 13306, 13364, 13368, 13372, 13394, 13398, 13402, 13424,

(100) 13426, 13428, 13456, 13486, 13544, 13574, 13578, 13634, 13636, 13664,

(101) 13756, 13814, 13816, 13818, 13842, 13844, 13846, 13848, 13852, 13874,

(102) 13936, 14054, 14058, 14062, 14084, 14138, 14142, 14146, 14170, 14172,

(103) 14176, 14262, 14264, 14266, 14318, 14322, 14324, 14354, 14384, 14474,

(104) 14478, 14480, 14506, 14682, 14684, 14686, 14804, 14808, 14810, 14812,

(105) 14836, 14890, 14892, 14894, 14896, 15016, 15044, 15048, 15052, 15104}

(106) {15128, 15132, 15136, 15164, 15194, 15224, 15228, 15230, 15232, 15254,
(107) 15258, 15260, 15286, 15314, 15318, 15322, 15338, 15342, 15344, 15346,
(108) 15374, 15404, 15464, 15466, 15468, 15472, 15522, 15524, 15526, 15556,
(109) 15584, 15588, 15590, 15592, 15676, 15728, 15788, 15792, 15796, 15818,
(110) 15822, 15826, 15856, 15944, 15974, 16244, 16274, 16276, 16304, 16308,
(111) 16312, 16336, 16362, 16366, 16396, 16480, 16482, 16486, 16516, 16606,
(112) 16634, 16664, 16696, 16726, 16782, 16784, 16786, 16816, 16844, 16874,
(113) 16958, 16962, 16964, 16966, 16988, 16992, 16994, 16996, 16998, 17026,
(114) 17084, 17108, 17110, 17112, 17114, 17116, 17176, 17204, 17206, 17234,
(115) 17236, 17414, 17418, 17422, 17444, 17448, 17452, 17536, 17654, 17656,
(116) 17714, 17776, 17832, 17834, 17836, 17838, 17842, 17866, 17926, 17954,
(117) 17956, 17958, 17962, 17984, 17988, 17990, 18044, 18074, 18106, 18128,
(118) 18226, 18254, 18368, 18372, 18376, 18464, 18494, 18496, 18586, 18644,
(119) 18706, 18734, 18796, 18884, 18888, 18944, 19064, 19066, 19068, 19094,
(120) 19096, 19186, 19336, 19486, 19508, 19510, 19512, 19516, 19576, 19634,
(121) 19812, 19816, 19844, 19846, 19906, 19932, 19934, 19936, 19938, 19942,
(122) 20018, 20022, 20024, 20026, 20054, 20142, 20144, 20146, 20176, 20236,
(123) 20266, 20354, 20356, 20386, 20414, 20416, 20446, 20474, 20476, 20478,
(124) 20480, 20536, 20564, 20568, 20594, 20624, 20626, 20686, 20744, 20746,
(125) 20774, 20804, 20808, 20984, 21072, 21076, 21134, 21138, 21226, 21278,
(126) 21282, 21286, 21404, 21408, 21412, 21734, 21738, 21742, 21854, 21946,
(127) 22034, 22038, 22062, 22066, 22156, 22244, 22248, 22334, 22454, 22514,
(128) 22544, 22696, 22724, 22754, 22786, 22904, 23084, 23114, 23116, 23144,
(129) 23174, 23414, 23476, 23536, 23684, 23714, 23804, 24098, 24102, 24106,
(130) 24374, 24376, 24404, 24464, 24524, 24528, 24532, 24554, 24584, 24586,
(131) 24614, 24764, 24766, 24794, 24796, 24884, 25094, 25184, 25186, 25208}

(132) {25212, 25214, 25216, 25244, 25304, 25358, 25362, 25366, 25484, 25544,
(133) 25548, 25552, 25604, 25634, 25664, 25814, 25874, 26048, 26052, 26054,
(134) 26056, 26084, 26146, 26234, 26294, 26444, 26474, 26476, 26504, 26508,
(135) 26684, 26774, 26836, 26864, 26894, 26896, 27074, 27104, 27136, 27346,
(136) 27376, 27400, 27402, 27406, 27434, 27614, 27676, 27796, 27886, 27910,
(137) 27912, 27914, 27916, 27944, 28066, 28124, 28184, 28332, 28334, 28336,
(138) 28338, 28454, 28514, 28726, 28874, 28876, 28928, 28932, 28936, 28958,
(139) 28962, 28966, 29174, 29234, 29326, 29354, 29384, 29386, 29444, 29504,
(140) 29594, 29598, 29602, 29624, 29626, 29714, 29834, 29864, 29924, 29928,
(141) 30014, 30044, 30046, 30196, 30224, 30228, 30254, 30256, 30346, 30434,
(142) 30438, 30584, 30586, 30616, 30644, 30676, 30704, 30708, 30766, 30886,
(143) 30914, 30944, 30974, 31036, 31064, 31094, 31096, 31246, 31302, 31304,
(144) 31306, 31426, 31514, 31636, 31696, 31874, 31906, 31934, 31936, 31964,
(145) 31966, 32056, 32084, 32144, 32294, 32324, 32354, 32414, 32446, 32476,
(146) 32506, 32566, 32626, 32744, 32774, 32776, 32896, 32954, 32956, 32978,
(147) 32982, 32984, 32986, 33046, 33134, 33138, 33194, 33286, 33374, 33404,
(148) 33434, 33584, 33612, 33614, 33616, 33704, 33708, 33712, 33734, 33794,
(149) 33798, 33914, 34004, 34036, 34064, 34068, 34124, 34156, 34186, 34214,
(150) 34274, 34276, 34424, 34456, 34514, 34544, 34606, 34694, 34696, 34784,
(151) 34788, 34812, 34814, 34816, 34904, 34936, 35026, 35054, 35084, 35294,
(152) 35296, 35324, 35414, 35476, 35682, 35684, 35686, 35716, 35774, 35800,
(153) 35924, 35926, 36076, 36102, 36106, 36134, 36136, 36194, 36344, 36346,
(154) 36494, 36498, 36524, 36616, 36646, 36704, 36734, 36764, 37066, 37126,
(155) 37154, 37184, 37186, 37246, 37274, 37484, 37602, 37606, 37726, 37784,
(156) 37788, 37792, 37816, 38026, 38204, 38236, 38386, 38474, 38536, 38564,
(157) 38568, 38572, 38622, 38626, 38656, 38684, 38894, 38986, 39016, 39044,
(158) 39076, 39134, 39226, 39436, 39496, 39646, 39764, 39914, 39974, 40094,
(159) 40126, 40276, 40304, 40308, 40334, 40366, 40426, 40486, 40544, 40906,
(160) 40936, 40994, 41056, 41114, 41118, 41144, 41148, 41176, 41326, 41354,
(161) 41384, 41474, 41564, 41566, 41594, 41746, 41894, 41898, 41924, 41928,
(162) 41932, 42016, 42044, 42194, 42254, 42284, 42556, 42644, 42826, 42854,
(163) 42884, 42944, 43006, 43124, 43216, 43274, 43276, 43454, 43484, 43486,
(164) 43514, 43576, 43664, 43694, 43696, 43964, 43996, 44174, 44204, 44264,
(165) 44326, 44474, 44504, 44746, 44806, 44984, 45252, 45256, 45518, 45522,
(166) 45526, 45554, 45558, 45586, 45674, 45974, 46004, 46006, 46034, 46184,
(167) 46244, 46366, 46514, 46576, 46604, 46608, 46718, 46720, 46722, 46724,
(168) 46726, 46786, 46814, 46846, 46934, 47084, 47086, 47288, 47292, 47296,
(169) 47356, 47408, 47412, 47416, 47472, 47476, 47504, 47508, 47512, 47596,
(170) 47626, 47832, 47836, 47896, 47956, 48072, 48076, 48106, 48166, 48284,
(171) 48314, 48338, 48342, 48346, 48404, 48408, 48466, 48554, 48584, 48616,
(172) 48676, 48706, 48734, 49064, 49156, 49334, 49364, 49366, 49486, 49516,
(173) 49544, 49576, 49754, 49784, 49786, 49876, 49936, 49964, 50086, 50146}

(174) {50206, 50258, 50262, 50266, 50294, 50536, 50714, 50716, 50776, 50986,
(175) 51014, 51046, 51284, 51374, 51406, 51434, 51466, 51526, 51644, 51762,
(176) 51764, 51766, 51826, 51944, 52036, 52094, 52098, 52100, 52126, 52154,
(177) 52246, 52304, 52306, 52426, 52512, 52516, 52726, 52756, 52846, 52876,
(178) 52906, 52934, 52994, 53026, 53144, 53146, 53168, 53172, 53176, 53204,
(179) 53236, 53262, 53266, 53324, 53328, 53354, 53416, 53444, 53534, 53564,
(180) 53566, 53594, 53656, 53684, 53716, 53774, 53864, 53926, 53986, 54016,
(181) 54074, 54164, 54166, 54168, 54172, 54194, 54404, 54436, 54548, 54552,
(182) 54556, 54766, 54794, 54822, 54826, 54976, 55036, 55064, 55184, 55212,
(183) 55216, 55244, 55276, 55334, 55394, 55514, 55544, 55546, 55574, 55606,
(184) 55724, 55754, 55844, 55876, 55966, 56054, 56236, 56264, 56356, 56414,
(185) 56446, 56472, 56474, 56476, 56596, 56684, 56806, 56866, 56894, 56924,
(186) 57068, 57072, 57076, 57136, 57526, 57554, 57584, 57704, 57706, 57734,
(187) 57738, 57916, 57942, 57944, 57946, 57976, 58126, 58186, 58366, 58448,
(188) 58452, 58456, 58484, 58606, 58726, 58782, 58786, 58814, 58934, 58964,
(189) 58966, 59114, 59176, 59264, 59294, 59322, 59326, 59386, 59414, 59566,
(190) 59684, 59714, 59954, 59958, 59962, 60076, 60166, 60226, 60254, 60496,
(191) 60672, 60676, 60704, 60734, 60856, 60886, 61066, 61094, 61126, 61216,
(192) 61246, 61304, 61486, 61694, 61696, 61846, 62024, 62116, 62266, 62384,
(193) 62626, 62654, 62684, 62686, 62806, 62834, 62956, 63044, 63106, 63164,
(194) 63254, 63286, 63344, 63404, 63494, 63614, 63676, 63704, 63764, 63766,
(195) 63856, 63946, 63976, 64006, 64154, 64186, 64244, 64364, 64394, 64484,
(196) 64574, 64578, 64582, 64724, 65084, 65324, 65326, 65384, 65414, 65476,
(197) 65504, 65506, 65532, 65536, 65626, 65714, 65744, 65834, 65924, 65954,
(198) 65986, 66166, 66346, 66376, 66496, 66554, 66558, 66586, 66764, 66884,
(199) 67214, 67274, 67358, 67362, 67366, 67454, 67486, 67514, 67576, 67636,
(200) 67664, 67694, 67844, 67966, 68056, 68114, 68144, 68146, 68294, 68356,
(201) 68416, 68476, 68654, 68656, 68686, 68774, 68834, 68836, 68864, 68984,
(202) 69074, 69194, 69284, 69314, 69434, 69494, 69524, 69554, 69674, 69704,
(203) 69886, 69914, 69916, 70156, 70606, 70664, 70726, 70786, 70844, 70964,
(204) 70968, 70996, 71174, 71206, 71626, 71656, 71776, 71986, 72166, 72194,
(205) 72224, 72256, 72316, 72464, 72466, 72524, 72642, 72646, 72734, 72854,
(206) 73034, 73064, 73068, 73072, 73184, 73304, 73306, 73334, 73424, 73484,
(207) 73516, 73544, 73724, 73728, 73754, 73814, 73816, 73904, 73934, 74114,
(208) 74146, 74296, 74324, 74506, 74534, 74564, 74566, 74624, 74716, 74804,
(209) 74864, 74984, 75008, 75012, 75076, 75136, 75162, 75166, 75346, 75436,
(210) }

(211) {75584, 75586, 75884, 76124, 76184, 76216, 76364, 76424, 76426, 76428,
(212) 76448, 76452, 76456, 76482, 76486, 76606, 76632, 76636, 76784, 76876,
(213) 77054, 77056, 77086, 77504, 77506, 77684, 77744, 77894, 77924, 77928,
(214) 77954, 78076, 78104, 78164, 78286, 78344, 78434, 78554, 78644, 78706,
(215) 78764, 78824, 78944, 78948, 79034, 79066, 79276, 79364, 79572, 79576,
(216) 79778, 79782, 79786, 79874, 79966, 80026, 80116, 80146, 80206, 80324,
(217) 80474, 80536, 80566, 80596, 80626, 80656, 80804, 80986, 81076, 81104,
(218) 81254, 81314, 81462, 81464, 81466, 81674, 81794, 81884, 82094, 82304,
(219) 82364, 82514, 82574, 82724, 82754, 82784, 82906, 82964, 82966, 83352,
(220) 83356, 83444, 83746, 83772, 83776, 83806, 83926, 84074, 84164, 84166,
(221) 84194, 84224, 84404, 84436, 84526, 84616, 84856, 85034, 85066, 85186,
(222) 85214, 85244, 85486, 85634, 85664, 85696, 85784, 85876, 85994, 86082,
(223) 86084, 86086, 86144, 86206, 86236, 86476, 86504, 86714, 86836, 86924,
(224) 86956, 87046, 87136, 87254, 87338, 87342, 87346, 87462, 87466, 87494,
(225) 87644, 87762, 87766, 87854, 87976, 88004, 88152, 88156, 88214, 88334,
(226) 88576, 88604, 88636, 88936, 89054, 89144, 89354, 89358, 89360, 89416,
(227) 89474, 89506, 89624, 89654, 89714, 89718, 89804, 89864, 89866, 89984,
(228) 89986, 90196, 90284, 90346, 90526, 90706, 90916, 90946, 91004, 91064,
(229) 91214, 91336, 91394, 91756, 91786, 91964, 91996, 92174, 92416, 92502,
(230) 92506, 92592, 92596, 92624, 92626, 92804, 93014, 93106, 93166, 93344,
(231) 93406, 93644, 93856, 93886, 93974, 94064, 94214, 94306, 94334, 94484,
(232) 94694, 94964, 95024, 95026, 95114, 95324, 95536, 95626, 95746, 95866,
(233) 95984, 96164, 96168, 96316, 96374, 96464, 96466, 96616, 96644, 96674,
(234) 96766, 96884, 96974, 97126, 97214, 97306, 97424, 97456, 97516, 97844,
(235) 97876, 97904, 98264, 98474, 98506, 98926, 99254, 99286, 99434, 99524,
(236) 99676, 99706, 99944, 99976, 100126, 100154, 100186, 100214, 100336}

$$
\begin{aligned}
&(237) \quad \{100574, 100696, 100784, 100816, 100846, 100904, 100934, 101026,\\
&(238) \quad 101236, 101416, 101596, 101626, 101866, 102044, 102284, 102286,\\
&(239) \quad 102374, 102464, 102466, 102584, 102674, 103004, 103276, 103304,\\
&(240) \quad 103334, 103726, 103784, 103994, 104024, 104444, 104566, 104626,\\
&(241) \quad 104806, 104926, 105016, 105404, 105434, 105586, 105614, 105616,\\
&(242) \quad 105674, 105824, 105854, 106034, 106066, 106154, 106244, 106246,\\
&(243) \quad 106304, 106456, 106516, 106874, 107086, 107116, 107266, 107444,\\
&(244) \quad 107506, 107626, 107746, 107894, 108106, 108556, 108586, 108676,\\
&(245) \quad 108796, 109096, 109186, 109216, 109424, 109426, 109606, 109876,\\
&(246) \quad 110022, 110024, 110026, 110084, 110206, 110234, 110264, 110416,\\
&(247) \quad 110654, 111076, 111134, 111284, 111314, 111434, 111676, 112154,\\
&(248) \quad 112546, 112726, 112754, 112906, 113206, 113384, 113804, 114134,\\
&(249) \quad 114434, 114494, 114584, 114644, 114854, 115036, 115064, 115094,\\
&(250) \quad 115184, 115246, 115274, 115306, 115516, 115666, 115876, 116114,\\
&(251) \quad 116146, 116326, 116384, 116506, 116534, 116566, 116926, 116954,\\
&(252) \quad 117374, 117404, 117436, 117586, 117704, 117976, 118004, 118094,\\
&(253) \quad 118424, 118634, 119026, 119056, 119264, 119446, 119474, 119684,\\
&(254) \quad 119864, 119868, 120316, 120706, 120826, 120976, 121126, 121364,\\
&(255) \quad 121392, 121396, 121484, 121634, 121664, 121756, 121994, 122054,\\
&(256) \quad 122204, 122236, 122414, 122834, 123016, 123164, 123168, 123172,\\
&(257) \quad 123224, 123286, 123344, 123704, 123856, 123974, 124096, 124214,\\
&(258) \quad 124516, 124906, 125144, 125534, 125564, 125624, 125746, 125774,\\
&(259) \quad 125804, 125984, 126406, 126614, 126734, 126736, 126824, 126976,\\
&(260) \quad 127064, 127274, 127454, 127458, 127576, 127636, 127694, 127696,\\
&(261) \quad 127756, 127994, 128114, 128204, 128292, 128296, 128534, 128834,\\
&(262) \quad 128924, 129106, 129134, 129254, 129344, 129376, 129496, 129586,\\
&(263) \quad 129824, 130216, 130244, 130306, 130454, 130604, 130634, 130814,\\
&(264) \quad 130846, 130994, 131234, 131414, 131446, 131656, 132106, 132676,\\
&(265) \quad 132944, 132946, 133036, 133124, 133128, 133244, 133364, 133366,\\
&(266) \quad 133514, 133544, 133754, 133874, 133964, 133968, 134444, 134836,\\
&(267) \quad 135406, 135644, 135648, 136094, 136274, 136484, 136694, 137146,\\
&(268) \quad 137174, 137236, 137504, 137536, 137954, 138014, 138376, 138584,\\
&(269) \quad 138916, 139004, 139008, 139012, 139034, 139186, 139246, 139336,\\
&(270) \quad 139846, 140176, 140266, 140534, 140716, 141104, 141314, 141524,\\
&(271) \quad 141644, 141734, 141758, 141762, 141766, 141944, 142096, 142154,\\
&(272) \quad 142156, 142336, 142364, 142756, 142784, 142816, 142844, 142906,\\
&(273) \quad 143026, 143536, 143656, 143774, 144586, 144886, 145094, 145098,\\
&(274) \quad 145126, 145424, 145514, 145604, 145636, 145934, 145936, 146354,\\
&(275) \quad 146474, 146896, 147194, 147376, 147404, 147436, 147524, 147644,\\
&(276) \quad 147646, 147944, 148006, 148246, 148426, 148664, 148666, 148846,\\
&(277) \quad 148874, 149084, 149086, 149088, 149504, 149714, 149746, 149956,\\
&(278) \quad \}
\end{aligned}
$$

(279) $\{150554, 150764, 150766, 150826, 151184, 151186, 151214, 151336,$

(280) $151396, 151424, 151754, 151758, 151762, 151786, 151814, 152024,$

(281) $152416, 152864, 152986, 153136, 153316, 153464, 153466, 153496,$

(282) $153736, 153914, 153918, 154544, 154756, 155174, 155206, 155326,$

(283) $155594, 155716, 155776, 156044, 156374, 156436, 156644, 156856,$

(284) $157064, 157246, 157394, 157756, 157904, 158146, 158564, 158566,$

(285) $158656, 158836, 158954, 159076, 159404, 159434, 159584, 159616,$

(286) $160004, 160186, 160396, 160424, 160426, 160456, 160576, 160844,$

(287) $161086, 161144, 161264, 161474, 161686, 161716, 161744, 161894,$

(288) $162736, 162976, 163154, 163364, 163424, 163696, 163756, 163814,$

(289) $164176, 164834, 165044, 165048, 165254, 166034, 166096, 166126,$

(290) $166544, 166724, 167144, 167264, 167562, 167566, 167984, 168016,$

(291) $168106, 168316, 168404, 168436, 168556, 168614, 168672, 168676,$

(292) $168824, 169276, 169306, 169366, 169396, 169604, 169608, 169666,$

(293) $169904, 169964, 169994, 170086, 170296, 170564, 170834, 170896,$

(294) $170926, 170956, 171134, 171254, 171554, 172184, 172306, 172394,$

(295) $172606, 172812, 172816, 173024, 173266, 173356, 173416, 173714,$

(296) $173864, 173926, 173956, 174106, 174374, 174524, 174704, 174764,$

(297) $174914, 175124, 175754, 175964, 176174, 176594, 176776, 176986,$

(298) $177224, 177466, 177646, 177976, 178274, 178484, 178516, 178546,$

(299) $180286, 180526, 181004, 181036, 181634, 181844, 181846, 181934,$

(300) $182296, 182716, 183136, 183314, 183854, 184124, 184126, 184276,$

(301) $184306, 184574, 184784, 185204, 185656, 186076, 186136, 186226,$

(302) $186946, 187754, 187964, 188264, 188354, 188386, 188774, 189194,$

(303) $189556, 189824, 190034, 190244, 190664, 190874, 191084, 191326,$

(304) $191416, 191714, 192344, 192554, 192916, 192974, 193184, 193394,$

(305) $194114, 194896, 195104, 195466, 195704, 195706, 195914, 196124,$

(306) $196306, 196334, 196366, 196544, 196756, 197174, 197206, 198166,$

(307) $198224, 198256, 198434, 198644, 198886, 199064, 199694, 199934,$

(308) $199964, 200174, 200356, 200534, 200744, 200954, 201374, 201556\}$

(309) {201646, 201764, 201854, 201914, 202034, 202274, 202426, 203474,
(310) 203656, 203684, 203714, 203894, 204104, 204134, 204314, 204524,
(311) 204856, 204916, 205154, 205334, 205606, 206026, 206596, 206834,
(312) 207226, 207464, 207496, 207734, 207916, 208066, 208726, 208756,
(313) 208906, 209056, 209176, 209596, 210166, 210586, 210614, 211696,
(314) 211874, 211876, 212174, 212504, 212746, 212924, 212956, 213166,
(315) 213196, 213586, 213764, 213884, 214576, 215234, 215444, 215476,
(316) 216044, 216494, 216736, 216944, 216946, 217726, 217756, 218506,
(317) 218566, 218594, 218598, 218894, 219046, 219584, 220306, 220366,
(318) 220604, 220694, 220936, 221114, 221744, 221776, 222584, 222704,
(319) 222766, 223424, 223456, 224266, 224716, 225014, 225104, 225136,
(320) 225734, 226486, 226784, 226994, 227026, 227236, 227386, 228254,
(321) 228258, 228346, 228496, 228884, 228976, 229724, 229936, 230354,
(322) 231856, 232034, 232066, 232244, 232426, 232516, 232874, 233084,
(323) 233116, 233266, 233294, 233296, 233326, 233416, 233714, 234586,
(324) 234766, 235216, 235846, 236234, 236476, 236536, 236776, 236864,
(325) 238366, 238574, 238634, 238726, 238786, 239804, 239836, 240134,
(326) 240224, 240854, 241064, 241484, 241514, 241844, 242146, 242534,
(327) 242564, 243826, 243854, 244816, 244966, 245264, 245386, 245414,
(328) 245804, 246104, 246196, 246314, 246856, 247574, 247994, 248026,
(329) 248176, 249016, 249916, 250724, 250966, 251174, 251386, 251446,
(330) 252194, 252226, 252404, 252436, 252914, 253034, 253244, 254294,
(331) 254504, 254536, 254686, 256096, 256184, 256366, 256516, 256846,
(332) 257144, 257686, 258074, 258286, 258494, 259934, 259964, 260146,
(333) 260384, 260388, 260626, 260834, 260986, 261466, 261766, 262186,
(334) 262484, 262726, 263056, 263324, 263446, 263926, 263954, 264644,
(335) 265456, 265934, 266264, 266474, 266716, 267016, 267646, 268126,
(336) 268812, 269024, 269116, 269326, 269624, 269866, 270044, 270076,
(337) 270856, 271094, 271126, 271696, 271724, 272144, 272176, 272564,
(338) 272686, 272896, 273016, 273404, 274576, 274874, 275416, 275504,
(339) 275714, 276136, 277184, 278324, 279702, 279706, 279946, 280334,
(340) 280366, 280544, 281146, 282256, 282854, 283096, 283694, 283874,
(341) 284114, 284986, 285164, 285584, 286876, 287086, 287806, 288016,
(342) 288104, 288286, 288314, 288524, 288734, 288916, 288944, 289154,
(343) 289186, 289574, 289996, 290954, 291706, 291884, 292304, 292724,
(344) 292966, 293536, 294436, 295216, 295276, 296056, 296084, 296506,
(345) 297344, 297614, 298186, 298936, 299686, 300106, 300316, 300406}

(346) $\{301964, 302146, 302804, 303466, 304666, 305356, 305954, 305956,$

(347) $306616, 307396, 307844, 308506, 308894, 309766, 310396, 311236,$

(348) $311414, 311836, 311866, 312706, 313756, 314176, 314596, 314984,$

(349) $316486, 316664, 317504, 317746, 317774, 318346, 318466, 318554,$

(350) $318764, 318944, 318974, 319216, 319426, 320774, 320776, 321494,$

(351) $321526, 322786, 325694, 325904, 326116, 326356, 326446, 327406,$

(352) $327466, 328246, 329294, 329474, 330136, 330766, 331966, 333254,$

(353) $333284, 335296, 335596, 335956, 336286, 336734, 336856, 338924,$

(354) $338926, 339376, 339584, 339676, 341896, 342494, 343096, 343126,$

(355) $343576, 343786, 344206, 344594, 345046, 346064, 346904, 348406,$

(356) $348584, 348826, 349876, 350684, 350866, 351976, 352396, 352996,$

(357) $353324, 353656, 356564, 357404, 360376, 361394, 361398, 361664,$

(358) $362024, 362654, 363106, 363736, 363946, 364666, 365294, 365384,$

(359) $365804, 366014, 366256, 366644, 366676, 367274, 367278, 369616,$

(360) $370004, 370814, 371264, 372524, 372586, 373486, 373574, 373816,$

(361) $374656, 374896, 376126, 378016, 378194, 378614, 379034, 379484,$

(362) $380444, 380536, 380746, 380926, 381136, 381974, 383266, 383626,$

(363) $383864, 384074, 384316, 384826, 385124, 386384, 386386, 386804,$

(364) $388096, 388666, 389324, 389954, 389986, 390374, 390406, 391004,$

(365) $393556, 395624, 395656, 396256, 396286, 396646, 397724, 397966,$

(366) $398806, 399856, 400874, 401116, 401834, 402884, 402946, 403184,$

(367) $403216, 404686, 404926, 405466, 406576, 408046, 408344, 408466,$

(368) $409274, 409516, 409726, 410776, 410986, 411286, 412876, 414104,$

(369) $414976, 415066, 415396, 415816, 416026, 417254, 417706, 418244,$

(370) $418844, 418966, 419116, 419596, 419896, 421486, 423376, 425084,$

(371) $425896, 426316, 428594, 429044, 429224, 430064, 430484, 430726,$

(372) $430964, 432616, 433876, 434054, 434684, 435734, 435944, 435946,$

(373) $436606, 437026, 438256, 438494, 439336, 440566, 441824, 442906,$

(374) $443714, 444886, 446266, 446656, 447494, 449836, 450046, 450854,$

(375) $451456, 452356, 452594, 452744, 452954, 453196, 453616, 454424,$

(376) $455236, 455474, 455926, 457784, 458834, 461056, 461984, 464294,$

(377) $465376, 465554, 465736, 465974, 466184, 467444, 467686, 468076,$

(378) $468946, 469544, 470206, 471256, 471466, 473114, 473566, 473954,$

(379) $474164, 475246, 476264, 477314, 477376, 477944, 478486, 478816,$

(380) $479624, 480916, 482774, 483404, 483436, 484064, 484216, 485746,$

(381) $487814, 487846, 488056, 488444, 489106, 489316, 490124, 490184,$

(382) $492046, 492434, 493694, 495166, 495196, 496246, 497474, 498104,$

(383) $498344, 498374, 499186, 500624, 501076, 502724, 503176, 503686\}$

(384) {504226, 504614, 504736, 507134, 507796, 508216, 511154, 512594,
(385) 512804, 513046, 513256, 513856, 515146, 516406, 516616, 516826,
(386) 517844, 518026, 518054, 519136, 520186, 520784, 521026, 522016,
(387) 523546, 523966, 526244, 526276, 526664, 526996, 527326, 527746,
(388) 530236, 531946, 532996, 533986, 535516, 535936, 536356, 536564,
(389) 537614, 537854, 537916, 539086, 539684, 540524, 540944, 541364,
(390) 541396, 543044, 543076, 545564, 548506, 549344, 549796, 550636,
(391) 551056, 551836, 552914, 553996, 555466, 556306, 556904, 558074,
(392) 559876, 560926, 563806, 564076, 565094, 565126, 565934, 568276,
(393) 568994, 569714, 570166, 571636, 571846, 572234, 574576, 574966,
(394) 574996, 577904, 577964, 578324, 578356, 578566, 580666, 580844,
(395) 581926, 583816, 586546, 589094, 589454, 589486, 590116, 591164,
(396) 591344, 592636, 593414, 596206, 596416, 597886, 599114, 599744,
(397) 602894, 603314, 603346, 603556, 604634, 606496, 608774, 610486,
(398) 611294, 611504, 611536, 611746, 611924, 612796, 613936, 616124,
(399) 617174, 617206, 620146, 621164, 621346, 622396, 628966, 632116,
(400) 634636, 636286, 637964, 639826, 642616, 643484, 643844, 645136,
(401) 649066, 654134, 654344, 655156, 656354, 656444, 657196, 657946,
(402) 658124, 661936, 663076, 664844, 665264, 666346, 672614, 673814,
(403) 675974, 676426, 676846, 677896, 679456, 679576, 680386, 680836,
(404) 682306, 687766, 687916, 694066, 695714, 696376, 697636, 698476,
(405) 698686, 698864, 700334, 703544, 710176, 710836, 714524, 717134,
(406) 718006, 724754, 730364, 732076, 733724, 736696, 736906, 738974}

(407) {740866, 744076, 745096, 749086, 749264, 749716, 750314, 750856,
(408) 753044, 753464, 753496, 757066, 757486, 758084, 759344, 760874,
(409) 762826, 763726, 766064, 766276, 767356, 767626, 768346, 771944,
(410) 775126, 777586, 777824, 781366, 781514, 788114, 789164, 790426,
(411) 791716, 792976, 797386, 798646, 803024, 804316, 807046, 808096,
(412) 810406, 812716, 815206, 815446, 815866, 817546, 818746, 819016,
(413) 819106, 825946, 826096, 830744, 832456, 832844, 836746, 836954,
(414) 838126, 838934, 839896, 841244, 841696, 845056, 850096, 853246,
(415) 854296, 856574, 857866, 858884, 859756, 864764, 872116, 873616,
(416) 879916, 885796, 886576, 887444, 888704, 892484, 903226, 903436,
(417) 906556, 910096, 917506, 931786, 935146, 936374, 936826, 941414,
(418) 943304, 943756, 945194, 947536, 951076, 954014, 954344, 955606,
(419) 956534, 962866, 965564, 967696, 968294, 969376, 972196, 976726,
(420) 978406, 979004, 980476, 985336, 993284, 993704, 993736, 993946,
(421) 994996, 996046, 1004446, 1007564, 1008434, 1010924, 1013626, 1018726,
(422) 1019146, 1019566, 1021456, 1028774, 1034024, 1044976, 1048336,
(423) 1053974, 1055654, 1056526, 1057366, 1060306, 1061114, 1062164,
(424) 1063904, 1064296, 1064926, 1073536, 1073956, 1076444, 1080676,
(425) 1085716, 1098526, 1099996, 1102694, 1103744, 1105666, 1108186,
(426) 1108816, 1111934, 1111966, 1112806, 1114664, 1117426, 1121206,
(427) 1125346, 1130176, 1133176, 1134226, 1135906, 1136414, 1141156,
(428) 1144274, 1145146, 1146164, 1151624, 1157714, 1158166, 1158344,
(429) 1160476, 1172114, 1176194, 1180846, 1181896, 1195724, 1196984,
(430) 1198454, 1205506, 1209826, 1210216, 1211506, 1215496, 1217144,
(431) 1221586, 1223264, 1226834, 1229926, 1234154, 1237936, 1238144,
(432) 1241924, 1242166, 1243184, 1250746, 1251164, 1267576, 1274114,
(433) 1274926, 1280596, 1283504, 1289836, 1292986, 1293164, 1295474,
(434) 1305586, 1315004, 1325956, 1328836, 1337806, 1338524, 1341496,
(435) 1354484, 1354726, 1364774, 1384094, 1386404, 1398406, 1406144,
(436) 1410796, 1435786, 1437676, 1441246, 1460356, 1471486, 1472924,
(437) }

(438) $\{1504246, 1506734, 1532806, 1533856, 1556536, 1563466, 1566794,$

(439) $1567544, 1572884, 1578166, 1583836, 1595384, 1597066, 1613626,$

(440) $1619326, 1620344, 1621156, 1627936, 1642786, 1645996, 1661294,$

(441) $1663664, 1674106, 1683554, 1702906, 1720966, 1726846, 1727896,$

(442) $1732936, 1736716, 1747216, 1749736, 1761286, 1763866, 1764404,$

(443) $1768846, 1781414, 1796324, 1804546, 1813366, 1821136, 1823954,$

(444) $1836854, 1850746, 1853056, 1859356, 1863136, 1866496, 1874024,$

(445) $1875284, 1886024, 1903036, 1903456, 1909724, 1911016, 1911436,$

(446) $1941826, 1967894, 1968556, 1970204, 2021686, 2033656, 2065906,$

(447) $2076674, 2087206, 2090954, 2100194, 2106046, 2126476, 2166376,$

(448) $2173936, 2194516, 2196794, 2211106, 2218036, 2220524, 2225596,$

(449) $2241734, 2268016, 2274914, 2277676, 2279534, 2279986, 2282296,$

(450) $2285866, 2314006, 2335604, 2339416, 2343196, 2344214, 2353034,$

(451) $2353906, 2356426, 2378686, 2381206, 2389816, 2404694, 2407424,$

(452) $2432234, 2440636, 2447146, 2460166, 2481586, 2490196, 2492506,$

(453) $2494784, 2511584, 2511826, 2514766, 2514976, 2528836, 2545636,$

(454) $2566006, 2592224, 2615776, 2617876, 2636114, 2640766, 2675836,$

(455) $2704574, 2725396, 2755846, 2769674, 2808104, 2808976, 2809816,$

(456) $2828054, 2832496, 2842996, 2882266, 2898016, 2962244, 2962276,$

(457) $3018976, 3028426, 3045436, 3167414, 3182744, 3211336, 3252496,$

(458) $3266954, 3328936, 3364216, 3365266, 3478844, 3535996, 3594974,$

(459) $3616186, 3634906, 3835666, 3836506, 3871576, 4089556, 4121654,$

(460) $4238834, 4294274, 4355384, 4575254, 4598774, 4924936, 4931866,$

(461) $4974916, 5139314, 5520464, 5598584, 5643346, 5751464, 6112696,$

(462) $6246676, 7310294, 7400384\}$