

PRIMES BETWEEN CONSECUTIVE SMARANDACHE NUMBERS

by

G. Suggett

I assume that the range between $S(n)$ and $S(n+1)$ should be interpreted as including the endpoints ? If one is looking for cases in which there are no primes in the open interval between the two consecutive values, then the range of exceptions is much larger, including $n = 1, 2, 3, 4, 5, 9, 14, 15, \dots$ Using the closed interval gives a much smaller list of exceptions, starting, as you state, with $n = 224$. I have confirmed that the next value is $n = 2057$, but to go further on a systematic basis would be far too time-consuming. However, taking the hint about prime pairs, I have found the following:

Associated with the prime pair (101, 103): 265225, 265226
Associated with the prime pair (107, 109): 67697937, 67697938
Associated with the prime pair (149, 151): 843637, 843638
Associated with the prime pair (461, 463): 24652435, 24652436
Associated with the prime pair (521, 523): 35558770, 35558771
Associated with the prime pair (569, 571): 46297822, 46297823
Associated with the prime pair (821, 823): 138852445, 138852446
Associated with the prime pair (857, 859): 157906534, 157906535
Associated with the prime pair (881, 883): 171531580, 171531581
Associated with the prime pair (1061, 1063): 299441785, 299441786
Associated with the prime pair (1301, 1303): 551787925, 551787926
Associated with the prime pair (1697, 1699): 1223918824, 1223918825
Associated with the prime pair (1721, 1723): 1276553470, 1276553471
Associated with the prime pair (1787, 1789): 5108793239997, 5108793239998
Associated with the prime pair (1871, 1873): 6138710055036, 6138710055037
Associated with the prime pair (1877, 1879): 1655870629, 1655870630
Associated with the prime pair (1949, 1951): 1853717287, 1853717288
Associated with the prime pair (1997, 1999): 1994004499, 1994004500
Associated with the prime pair (2081, 2083): 2256222280, 2256222281
Associated with the prime pair (2111, 2113): 9945866761776, 9945866761777
Associated with the prime pair (2237, 2239): 2802334639, 2802334640
Associated with the prime pair (2381, 2383): 3378819955, 3378819956

Associated with the prime pair (2657, 2659): 4694666584, 4694666585
Associated with the prime pair (2729, 2731): 5086602202, 5086602203
Associated with the prime pair (2801, 2803): 5499766300, 5499766301
Associated with the prime pair (3251, 3253): 55912033969191, 55912033969192
Associated with the prime pair (3257, 3259): 8645559934, 8645559935
Associated with the prime pair (3461, 3463): 10373399185, 10373399186
Associated with the prime pair (3557, 3559): 11260501609, 11260501610
Associated with the prime pair (3581, 3583): 11489910655, 11489910656
Associated with the prime pair (3671, 3673): 90891127331586, 90891127331587
Associated with the prime pair (3917, 3919): 15036031219, 15036031220
Associated with the prime pair (3929, 3931): 15174611302, 15174611303
Associated with the prime pair (4001, 4003): 16024009000, 16024009001
Associated with the prime pair (4127, 4129): 145169740720152, 145169740720153
Associated with the prime pair (4217, 4219): 18761158894, 18761158895
Associated with the prime pair (4241, 4243): 19083231940, 19083231941
Associated with the prime pair (4421, 4423): 21617036545, 21617036546
Associated with the prime pair (4517, 4519): 23055716569, 23055716570
Associated with the prime pair (4547, 4549): 213896677247667, 213896677247668
Associated with the prime pair (4649, 4651): 25136152762, 25136152763
Associated with the prime pair (4721, 4723): 26321940220, 26321940221
Associated with the prime pair (5009, 5011): 31437871492, 31437871493
Associated with the prime pair (5021, 5023): 31664313895, 31664313896
Associated with the prime pair (5099, 5101): 338226861243825, 338226861243826
Associated with the prime pair (6089, 6091): 56466627682, 56466627683
Associated with the prime pair (6197, 6199): 59524353949, 59524353950
Associated with the prime pair (6569, 6571): 70898343322, 70898343323
Associated with the prime pair (6701, 6703): 75258100075, 75258100076
Associated with the prime pair (6869, 6871): 81060670597, 81060670598
Associated with the prime pair (7457, 7459): 103706773384, 103706773385
Associated with the prime pair (7589, 7591): 109311364057, 109311364058
Associated with the prime pair (7757, 7759): 116731835059, 116731835060

and so on. I am reaching the limits of my computational power, but with no obvious end in sight to the list. Do you have a copy of Radu's proof that the set is finite ? Does it give an upper bound on the values in the set ? I am intrigued.

Current address:

34 Bridge Road, Worthing,
West Sussex, BN14 7BX, U.K.