[Review article]

\[ \sqrt{30a-11} = t \]
and
\[ \sqrt{16a-7} = t \]

Toshiro Takami
Mmm82889@yahoo.co.jp

【Abstract】
\[ \sqrt{30a-11} = t \] and \[ \sqrt{16a-7} = t \] are of course an expression derived from \[ \sqrt{30a+1} = t \] and \[ \sqrt{16a+1} = t \], but decided to announce \[ \sqrt{30a-11} = t \] and \[ \sqrt{16a-7} = t \], because it has a feeling of producing more prime than \[ \sqrt{30a+1} = t \] and \[ \sqrt{16a+1} = t \]. These have the advantage that they do not produce numbers that end with 5 and it is difficult to produce a multiplication of prime numbers.

\[ \sqrt{30a - 11} = t \]
\[ \sqrt{16a - 7} = t \]

【at first】
Initially it seemed like an enumeration of prime numbers, but the number became bigger and there was only a few prime numbers, in this case it would have been better to use \[ \sqrt{30a+1} = t \] and \[ \sqrt{16a+1} = t \] as it was.
【discussion】
\[ \sqrt{30a - 11} = t \]
(a and t are positive integer)
Below is the one which yielded a integer.
(Never chose a prime number. I mentioned all the integers that came out.)

\[
\begin{align*}
a &= 2, \ t = 7 \\
a &= 6, \ t = 13 \\
a &= 10, \ t = 17 \\
a &= 18, \ t = 23 \\
a &= 46, \ t = 37 \\
a &= 62, \ t = 43 \\
a &= 74, \ t = 47 \\
a &= 94, \ t = 53 \\
a &= 151, \ t = 67 \\
a &= 178, \ t = 73 \\
a &= 199, \ t = 77 \ldots \ldots \ldots xx \\
a &= 230, \ t = 83 \\
a &= 314, \ t = 97 \\
a &= 354, \ t = 103 \\
a &= 382, \ t = 107 \\
a &= 427, \ t = 113 \\
a &= 538, \ t = 127 \\
a &= 590, \ t = 133 \ldots \ldots \ldots xx \\
a &= 626, \ t = 137 \\
a &= 682, \ t = 143 \ldots \ldots \ldots xx \\
a &= 822, \ t = 157 \\
a &= 887, \ t = 163 \\
a &= 930, \ t = 167 \\
a &= 998, \ t = 173 \\
a &= 1166, \ t = 187 \ldots \ldots \ldots xx \\
a &= 1242, \ t = 193 \\
a &= 1284, \ t = 197 \\
a &= 1374, \ t = 203 \\
a &= 1570, \ t = 217 \ldots \ldots \ldots xx
\end{align*}
\]
\(a=1658, \ t=223\)
\(a=1791, \ t=227\)
\(a=1811, \ t=233\)
\(a=2034, \ t=247\)
\(\ldots\ldots\ldots xx\)
\(a=2134, \ t=253\)
\(\ldots\ldots\ldots xx\)
\(a=2202, \ t=257\)
\(a=2206, \ t=263\)
\(a=2558, \ t=277\)
\(a=2670, \ t=283\)
\(a=2746, \ t=287\)
\(a=2862, \ t=293\)
\(a=3147, \ t=307\)
\(a=3266, \ t=313\)
\(a=3350, \ t=317\)
\(a=3478, \ t=323\)
\(\ldots\ldots\ldots xx\)
\(a=3786, \ t=337\)
\(a=3922, \ t=343\)
\(\ldots\ldots\ldots xx\)
\(a=4014, \ t=347\)
\(a=4154, \ t=353\)
\(a=4490, \ t=367\)
\(a=4638, \ t=373\)
\(a=4738, \ t=377\)
\(a=4890, \ t=383\)
\(a=5254, \ t=397\)
\(a=5414, \ t=403\)
\(\ldots\ldots\ldots xx\)
\(a=5522, \ t=407\)
\(\ldots\ldots\ldots xx\)
\(a=5686, \ t=413\)
\(\ldots\ldots\ldots xx\)
\(a=6078, \ t=427\)
\(\ldots\ldots\ldots xx\)
\(a=6250, \ t=433\)
\(a=6366, \ t=437\)
\(\ldots\ldots\ldots xx\)
\(a=6542, \ t=443\)
\(a=6963, \ t=457\)
\(a=7146, \ t=463\)
\(a=7270, \ t=467\)
\(a=7458, \ t=473\)
\(\ldots\ldots\ldots xx\)
\(a=7906, \ t=487\)
\(a=8102, \ t=493\)
\(a=8234, \ t=497\)
\(\ldots\ldots\ldots xx\)
prime number representable either as \((6n+1)\) or as \((6n-1)\).

Let \(t=6n+1\),

\[
\text{then } t^2 = 36n^2 + 12n + 1 = 12(3n^2 + n) + 1 = 12\{(3n^2 + (n+1)) - 1\} + 1
\]

= \(12\{(3n^2 + (n+1)) - 1\} - 12 = 12\{3n^2 + (n+1)\} - 11\)

if \(n\) is \((=5k)\) \((k\text{ is positive integer})\), then immediately we get

\[
t^2 = 12\{3*5k^2 + 2*(n+1)\} - 11 = 12\{3*5k^2 + 2*11k + 2(n+1)\} - 11 = 30\{15k^2 + 7k + 1\} - 11\]

if \(n\) is \((=5k+1)\) then immediately we get

\[
t^2 = 12\{3*[5k+1]^2 + 2(n+1)\} - 11 = 12\{3*[25k^2 + 10k + 1] + [5k+1] + 1\} - 11 = 12\{75k^2 + 35k + 5\} - 11 = 60\{15k^2 + 7k + 1\} - 11 = 30\{30k^2 + 14k + 2\} - 11
\]

if \(n\) is \((=5k+2)\) then immediately we get

\[
t^2 = 12\{3*[25k^2 + 20k + 1] + [5k+2] + 1\} - 11 = 12\{3*[25k^2 + 20k + 1] + 5k + 2 + 1\} - 11 = 12\{75k^2 + 35k + 6\} - 11 = 12\{75k^2 + 35k + 6\} - 11 \text{ (It does not hold)}
\]

if \(n\) is \((=5k+3)\) then immediately we get

\[
t^2 = 12\{3*[25k^2 + 30k + 9] + [5k+3] + 1\} - 11 = 12\{3*[25k^2 + 30k + 9] + 5k + 3 + 1\} - 11 = 12\{75k^2 + 90k + 27 + 5k + 4\} - 11 = 12\{75k^2 + 35k + 31\} - 11 = 12\{75k^2 + 35k + 31\} - 11 \text{ (It does not hold)}
\]

if \(n\) is \((=5k+4)\) then immediately we get

\[
t^2 = 12\{3*[5k+4]^2 + [5k+4] + 1\} - 11 = 12\{3*[25k^2 + 40k + 16] + [5k+4] + 1\} - 11 = 12\{75k^2 + 125k + 53\} - 11 \text{ (It does not hold)}
\]

similarity, if \(t=6n-1\).
\[ \sqrt{16a - 7} = t \]

(a and t are positive integer)
Below is the one which yielded an integer.
(Never chose a prime number. I mentioned all the integers that came out.)

\[
\begin{align*}
a &= 1, \quad t = 3 \\
a &= 2, \quad t = 5 \\
a &= 8, \quad t = 11 \\
a &= 11, \quad t = 13 \\
a &= 23, \quad t = 19 \\
a &= 29, \quad t = 21 \\
a &= 46, \quad t = 27 \\
a &= 52, \quad t = 29 \\
a &= 76, \quad t = 35 \\
a &= 95, \quad t = 37 \\
a &= 116, \quad t = 43 \\
a &= 126, \quad t = 45 \\
a &= 163, \quad t = 51 \\
a &= 176, \quad t = 53 \\
a &= 219, \quad t = 59 \\
a &= 233, \quad t = 61 \\
a &= 280, \quad t = 67 \\
a &= 297, \quad t = 69 \\
a &= 353, \quad t = 75 \\
a &= 371, \quad t = 77 \\
a &= 432, \quad t = 83 \\
a &= 452, \quad t = 85 \\
a &= 518, \quad t = 91 \\
a &= 540, \quad t = 93 \\
a &= 613, \quad t = 99 \\
a &= 638, \quad t = 101 \\
a &= 717, \quad t = 107 \\
a &= 743, \quad t = 109 \\
a &= 827, \quad t = 115 \\
a &= 856, \quad t = 117 \\
a &= 946, \quad t = 123
\end{align*}
\]
\(a=977, \ t=125\ldots xx\)
\(a=1073, \ t=131\)
\(a=1106, \ t=133\ldots xx\)
\(a=1208, \ t=139\)
\(a=1243, \ t=141\ldots xx\)
\(a=1351, \ t=147\ldots xx\)
\(a=1388, \ t=149\)
\(a=1502, \ t=155\ldots xx\)
\(a=1541, \ t=157\)
\(a=1661, \ t=163\)
\(a=1702, \ t=165\ldots xx\)
\(a=1828, \ t=171\)
\(a=1870, \ t=173\)
\(a=2003, \ t=179\)
\(a=2048, \ t=181\)
\(a=2186, \ t=187\)
\(a=2233, \ t=189\)
\(a=2377, \ t=195\ldots xx\)
\(a=2426, \ t=197\)
\(a=2577, \ t=203\)
\(a=2628, \ t=205\ldots xx\)
\(a=2783, \ t=211\)
\(a=2836, \ t=213\)
\(a=2998, \ t=219\)
\(a=3053, \ t=221\)
\(a=3221, \ t=227\)
\(a=3278, \ t=229\)
\(a=3452, \ t=235\ldots xx\)
\(a=3511, \ t=237\)
\(a=3691, \ t=243\)
\(a=3752, \ t=245\ldots xx\)
\(a=3938, \ t=251\)
\(a=4002, \ t=253\)
\(a=4193, \ t=259\)
\(a=4258, \ t=261\ldots xx\)
\(a=4456, \ t=267\ldots xx\)
\(a=4523, \ t=269\)
\(a=4727, \ t=275\ldots xx\)
prime number representable either as $(8n+1)$ or as $(8n-1)$

Let $t=8n+1$, then $t^2=64n^2+16n+1=16(4*2n^2+n)+1=16\{8n^2+(n+1)-1\}+1$

$=16\{8n^2+(n+1)\}-7$

similarity, if $t=8n-1$. 
(a and t are positive integer)  
Below is the one which yielded a prime number.

\[ \sqrt{24a + 1} = t \]  \hspace{1cm} (1)

(a = positive integer, t = prime number)  
Below is the one which yielded a prime number.

a=1, t=5
a=2, t=7
a=5, t=11
a=7, t=13
a=12, t=17
a=15, t=19
a=22, t=23
a=35, t=29
a=40, t=31
a=57, t=37
a=70, t=41
a=77, t=43
a=92, t=47
a=117, t=53
a=145, t=59
a=155, t=61
a=187, t=67
a=210, t=71
a=222, t=73
a=247, t=77
a=260, t=79
a=287, t=83
a=330, t=89
a=392, t=97
a=425, t=101
a=442, t=103
a=477, t=107
a=495, t=109
a=532, t=113
a=672, t=127
a=715, t=131
a=782, t=137
a=805, t=139
a=925, t=149
a=950, t=151
a=1028, t=157
a=1107, t=163
a=1162, t=167
a=1247, t=173
\[ \sqrt{24a+1} = t \]
Prime number is representable either as \((6n+1)\) or as \((6n-1)\).

If \(a=6n+1\), 
\[
t^2 = 36n^2 + 12n + 1
\]
\[
t^2 = 12(3n^2+n) + 1
\]

If even \((2k=n)\)
\[
t^2 = 12(6k^2 + 2k) + 1 = 24(3k^2 + 2k) + 1
\]

If odd \((2k+1=n)\)
\[
t^2 = 12\{6(k+1)^2 + 2(k+1)\} + 1 = 12\{6k^2 + 12k + 1 + 2k + 2\} + 1
\]
\[
= 12\{36k^2 + 14k + 4\} = 24\{18k^2 + 7k + 2\} + 1
\]
similarly, if \(a=6n-1\).

Reference
1) https://en.wikipedia.org/wiki/Prime_number
2) https://en.m.wikipedia.org/wiki/Formula_for_primes

 والسـنـدـة

\[\text{sqrt}(48a+1)=t\]
\((a=\text{positive integer, } t \text{ is prime number})\)
When announcing \(\text{sqrt} (24a + 1)\), it is a very lost formulation whether to issue this or to get out of here.
At that time, I thought \(\text{sqrt} (24a - 23)\) and \(\text{sqrt} (48a-23)\) were very good with excel.
I was very lost how to announce which, I announced \(\text{sqrt}(48a+1)=t\).
I did not calculate such as $6n + 1$, I was seeking expressions that prime numbers were excavated at excel.
While organizing past files, I thought that this was better and decided to announce.

I am a psychiatrist now and also a doctor of brain surgery before.

home

〒854-0067

Toshiro Takami
47-8 kuyamadai, Isahaya City, Nagasaki Prefecture, Japan
Currently 56 years old
Born on November 26, 1961
mmm82889@yahoo.co.jp
I would like to receive an email. I will not answer the phone.
I am very poor of english. Document are all google-translation.
When it is translated into English, Japanese becomes cryptographically.
\[ \zeta(s) = \sum_{n=1}^{\infty} \frac{1}{n^s} \]  
\[ \zeta(s) = \frac{2^s}{2^s - 1} \frac{3^s}{3^s - 1} \frac{5^s}{5^s - 1} \frac{7^s}{7^s - 1} \ldots \]  

【References】


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I am a psychiatrist now and also a doctor of brain surgery before.

Office
〒854-0007
Toshiro Takami
Akiyama hospital
737-1 Megai-cho, Isahaya City, Nagasaki Prefecture, Japan
tel: 0957-22-2370  fax: 0957-23-8031

home
〒854-0067
Toshiro Takami
47-8 kuyamadai, Isahaya City, Nagasaki Prefecture, Japan

mmm82889@yahoo.co.jp
I would like to receive an email. I will not answer the phone.

Currently 56 years old
Born on November 26, 1961