

Re: Prime Sums In A Grid

Source: <http://sci.tech-archive.net/Archive/sci.math/2009-02/msg03339.html>

- *From:* Tim Woodall <devnull@xxxxxxxxxxxxxx>
 - *Date:* Tue, 24 Feb 2009 14:07:15 +0000 (UTC)
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On Tue, 24 Feb 2009 08:38:47 -0500,
quasi <quasi@xxxxxxx> wrote:

On Tue, 24 Feb 2009 13:27:30 +0000 (UTC), Tim Woodall
<devnull@xxxxxxxxxxxxxx> wrote:

On Tue, 24 Feb 2009 05:25:21 -0500,
quasi <quasi@xxxxxxx> wrote:

On Tue, 24 Feb 2009 01:55:29 -0800 (PST),
gerry@xxxxxxxxxxxxxx wrote:

On Feb 24, 6:18 pm, quasi
<qu...@xxxxxxx> wrote:

On Tue, 24 Feb 2009
09:07:02 +0200, Phil
Carmody

This has
almost
certainly
been done
on Carlos
Rivera's
primepuzzles.net.

Then give the solution, if
any, for $n = 5$.

Phil has told you where he thinks you'll find
an answer.
Since you're the one who wants an answer,
shouldn't you just go there & report back to

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us?

I_went_ there. The place is a zoo of puzzles and problems. Personally, I doubt that the specific problem I posed is actually there, but if it is, presumably Phil Carmody would know where to find it. After all, he said he was "almost certain" it had already been done on Rivera's website.

quasi

25 24 23 22 19 (113)
21 20 18 17 13 (89)
16 15 14 12 2 (59)
11 9 8 7 6 (41)
10 5 4 3 1 (23)
(83) (73) (67) (61) (41)

There are lots more.

Nice.

I assume you did a computer search, but even so, it couldn't have been just brute force. What was your strategy?

It seems now that it may be doable for all $n > 1$, however if that's the case, I doubt that we will be able to prove it.

quasi

36 35 34 33 32 29 (199)
31 30 28 27 26 25 (167)
24 23 22 21 20 17 (127)
19 18 14 12 11 9 (83)
16 15 8 4 3 1 (47)
13 10 7 6 5 2 (43)
(139) (131) (113) (103) (97) (83)

I'll need to clean up the code to do 7x7. I've got some serious inefficiencies (It's actually code for magic squares I had lying around that I've hacked)

Strategy was:

- 1. Find all the possible primes for each row.

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2. Find a set of primes that sum to the $n(n+1)/2$. If no more then quit with no more solutions.
3. Arrange the $n*n$ integers so that they sum to the primes in 2. If no solution then go back to 2.
4. Check that the columns all sum to a prime. If yes then print solution
5. continue from step 3 for another arrangement of the integers.

The big speedup would be to precalculate the possible ways of summing to the primes calculated in 3.

Tim.

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God said, " $\text{div } D = \rho$, $\text{div } B = 0$, $\text{curl } E = - @B/@t$, $\text{curl } H = J + @D/@t$,"
and there was light.

<http://www.woodall.me.uk/>

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