

Re: diophantine equation $1/x + 1/y = 1/n$

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Source: <http://sci.tech-archive.net/Archive/sci.math/2007-08/msg03560.html>

- *From:* "Philippe 92" <nospam@xxxxxxxxxxxxxx>
 - *Date:* Wed, 22 Aug 2007 11:40:25 +0200
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mukesh tiwari wrote :

On Aug 22, 1:03 pm, Proginoskes <CCHeck...@xxxxxxxxxx> wrote:

On Aug 22, 12:32 am, mukesh tiwari <mukeshtiwari.ii...@xxxxxxxxxx> wrote:

hello everybody i want to know how many distinct solution of equation $(1/x+1/y=1/n)$ for given value of n .

If you are allowing negative integers, the answer is the number of factors of (n^2) . If you want only positive solutions, take the number of factors of n^2 , add 1, and then divide the whole thing by 2.

for example if $n=4$ then three distinct solution (5,20)(6,12) and (8,8). plz tell me the algorithm to solve this problem .

Basically, you combine the terms of $1/n - 1/y$ and use the fact that this fraction reduces to $1/x$.

negative numbers are not allowed . actually initially i was also using the same algorithm but i think it seems to be failed for $n=1260$ answer is 113 . chk out this link .

<<http://projecteuler.net/index.php?section=problems&id=110>>

Hi,

$1260^2 = 2^4 * 3^4 * 5^2 * 7^2$ has
 $5*5*3*3 = 225$ divisors (including 1 and 1260^2)
 $(225+1)/2 = 113$

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This is not a too large number, and the brute force agrees and gives the full list of the 113 solutions.

Where is the failure ?

(your direct link to your pb110 fails, so does the internal link from pb110 to pb108. This allways goes back to your index page)

And this reformulates your problems as :
"find the smallest square whose number of divisors is ..."

See also my own version of this problem
http://chehip.free.fr/pba_en/pb036.html

and the topic of last month
"A lost treasure (Series within Parallel resistor combinations.)"
by Quentin Grady on sci.math
Message-ID: <ghhr93lgbf8r1vboga40422v2aec14q0ig@xxxxxxx>

Regards.

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Philippe C., mail : chehip+news@xxxxxxx
site : <http://chehip.free.fr/> (recreational mathematics)

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