Re: −−− −−− Irrational solutions

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- *From*: quasi <quasi@xxxxxxxx>
- *Date*: Mon, 04 Feb 2008 07:12:20 −0500

On Sun, 3 Feb 2008 05:24:36 −0800 (PST), Deep <deepkdeb@xxxxxxxxx>
wrote:

> On Feb 2, 11:34 pm, quasi <qu...@xxxxxxxx> wrote:
>
>> On Sat, 2 Feb 2008 18:04:43 −0800 (PST), Deep <deepk...@xxxxxxxxx>
>> wrote:
>>
>>> Consider the following equation under the given conditions.
>>>
>>> R^(1/2) = n^(k−2)[S/T] (1)
>>>
>>> where S = m^(k−1) − Am^(k−3) + Bm^(k−5) − .. − k
>>> (2)
>>>
>>> T = n^(k−1) − An^(k−3) + Bn^(k−5) − ... ..−
>>> k (3)
>>>
>>> mn =
>>> 1 (4)
>>>
>>> Condition: R is positive rational but not a perfect square.
>>> k is a prime > 3, A, B, .. divisible by k
>>>
>>> Assertion: m = u^(1/2) where u is rational but not a perfect
>>> square
>>> will satisfy (1)
>>
>> You need to declare the restrictions on _all_ your variables.
>>
>> Let's see what you forgot ...
>>
>> Variables: R, S, T, k, m, n, A,B, ...
>>
>> Restrictions:

R is a positive rational but not a perfect square.

S,T are what? Presumably positive reals, but you didn't say.

k is a prime, k > 3

mn = 1, but m,n are what? Presumably positive reals, but you didn't say. You did state an asserted _conclusion_ about m,n but not a declaration of their types in the hypothesis.

A,B, ... are "divisible by k". Thus, A,B, ... are presumably integers, but you didn't say. Without further specification, one would have to assume arbitrary integer multiples of k, possibly zero, possibly negative. If that's not what you intended, you have to make your restrictions clear.

You are often careless in this regard, and several times in the past I've made the same objection. You need to declare the types and restrictions on your variables −− _all_ of them.

Although I can see in advance that for any of the likely specifications for the missing declarations, your assertion is false, there's no sense trying to provide a counterexample until you fully specify all the conditions. Thus, before exposing the hopelessness of your almost certainly false assertion, please fix your problem statement. Also, you have a typo in condition (2).

Thank you very much for your comments. Your comments are valid and I must be careful in defining the problem. Now kindly note the following:

1. All the variables are real and each > 0
2. Each of the variables A, B, ... is an integer and divisible by k.
3. Prime k > 3
4. S and T are defined in terms of m and n so they are also real.
5. mn = 1
6. My goal is to prove that only m = u^(1/2) will satisfy the condition R^(1/2) is irrational
and R is rational given u is rational but not a perfect square.

I thank you for your helpful comments and I look forward to hearing from you about the correctness of the assertion.

The assertion is false. Moreover, counterexamples can be created almost arbitrarily. Here's one counterexample, done with one eye closed (in other words, there was no need to get clever) ...

Let k = 7.

Let n = the positive root between 1 and 1.1 of the equation

−223*n^14
+3171*n^12
−17563*n^10
+47712*n^8
−65968*n^6
+43813*n^4
−10941*n^2
+1
= 0

Then n is approximately equal to 1.001383065.

Let m = 1/n.

Then m is approximately .9986188452.

Let S = m^6 − 7m^4 + 28m^2 − 7

Then S is approximately 14.95304266.

Let T = n^6 − 7n^4 + 14n^2 − 7

Then T is approximately 1.008273500.

Let R = (n^10)*(S/T)^2

Then R is _exactly_ 223.

Thus, all the conditions of your hypothesis are satisfied, but m,n are of degree 14 over Q, hence your asserted conclusion fails.

So that takes care of your latest flawed conjecture.

Let me make some general remarks. This is one of dozens of such systems of equations you've posted to sci.math, and in almost every case, your assertion had no chance of being true. My recommendation is to stop wasting time with these meaningless wild goose chases.

In a previous thread, I asked you what these mysterious systems of equations were all about, but you dodged the question. However a recent thread of yours gave away the object of your secret quest −− you're hunting FLT. In principle, there's nothing wrong with that, except that the particular strategy you're stuck on is doomed to failure −− guaranteed, perpetual failure. There has to be a more productive use of your time and energy.

I would stop fooling with these systems of equations. Not only do they not work, but you have no idea _why_ they fail. Instead, why not start a serious self−study of

(1) elementary number theory −− divisibility, congruences
(2) abstract algebra −− groups, rings, fields
(3) linear algebra −− brief review of vector spaces, linear maps
(4) field theory −− galois theory
(5) algebraic number theory

Give yourself a year or two, maybe more. Speed is not as important as mastery, so however long it takes. But all of the above self−study courses should be done with full rigor −− in other words, _proofs_, not just assertions.

Assuming you complete the above, you can then pursue

(6) commutative algebra
(7) algebraic geometry

at which point you will have some serious power tools for dealing with the kinds of problems that you seem to be interested in.

quasi
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