TO: Alexander Schiemann. Actual date unsure, but 1997. Alexander accepted Kap's invitation to be a co-author in 1996.

From: Irving Kaplansky <kap>
Date: Tue, 19 Aug 1997 12:44:36 -0700 (PDT)
To: jagy

From: Irving Kaplansky <kap>
Date: Thu, 8 May 1997 15:29:24 -0700 (PDT)
To: aschiem@math.uni-sb.de
Subject: A conjecture; proofreading plans
Cc: kap

Dear Alexander:

There are two things on my mind.

1. After years of wondering I now have a conjecture on when two positive ternaries represent the same numbers, ignoring multiplicity. If proved, this could be regarded as a strengthening of your theorem. However, I see no hope of proving it at present.

The conjecture is long winded to state. Suppose f, g represent the same numbers. If one is regular so is the other. So there are two cases. Case I: f, g are regular. Fortunately this is now a straightforward (but tedious) task. I have not finished it, but I think I have them all. I'll skip the details for now. Case II: neither regular. This is the real conjecture. I believe that in Case II the answer is given by the following three infinite families (they include some regular ones):

s s t 0 0 s	diagonal s 3s t
s s t s 0 s	s 4s t 2s 0 s
s s s t t t	s 4s 2s-t 4s-2t 0 2t

} same family up to equivalence!

$\langle s,s,t,s,0,s\rangle \cong \langle s,s,t,s,s,s\rangle \cong \langle t,t,t,2t-s,2t-s,2t-s\rangle$.

There are still more disguises for these forms under Schiemann reduction.

I have a modest amount of evidence for the conjecture.

2. We have no idea when proof sheets will come for our joint paper, but it might be any day now. Let's plan ahead.

Recently I handled a paper where I had coauthors in the Netherlands and Australia. They made life simple by trusting me with the proofreading.

I am assuming that the proofsheets will not be transmitted electronically. So I am going to ask whether you would trust us. Putting aside the tables, the paper is short and simple. We would send you the corrected proofs by snailmail, but go ahead and return them at once, the way journals like it.

While at it, we would be happy to execute the repriont order for you. How many reprints would you like?

Finally, we would like to insert an added in proof.

Added in proof. 1. It has now been checked that the 22 candidates represent all eligible numbers up to two million. 2 A document has been prepared that accounts for the 97 (= 913 - 794 - 22) proofs of regularity. 3. A table has been compiled that lists all

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non-represented eligible integers up to a million for non-regular forms up to discriminant 22 for odd forms and discriminant 18 for even forms. (These bounds were chosen because after that there are genera with more than two forms). Items 2 and 3 are available on request.

OK?

Best regards
Kap

From: Alexander Schiemann <Alexander.Schiemann@Mathematik.Uni-Dortmund.De>
Subject: joint paper
To: kap@msri.org (Irving Kaplansky)
Date: Fri, 2 Aug 1996 13:48:31 +0200 (METDST)
X-Mailer: ELM [version 2.4 PL23]
Content-Type: text

Dear Kap,

I accept with thanks your offer to be a co-auther.

There were no problems to process and print the LATEX file of the paper (and I received the paper copy too). I have no suggestions for changes.

To put the forms in the canonical form that I use, I wrote a little program. I will send this program to Will's account. Below is the list of forms and their "canonical representatives".

Best Wishes
Alexander

input :	representative:	
7 7 28 2 -2 1	7 7 28 -2 2 1	— 5400
5 13 40 20 4 1	5 13 33 -6 3 1	— 8232
11 36 81 27 -42 18	9 11 29 -4 3 6	— 10125
11 15 44 6 16 3	11 15 39 -3 6 3	— 24690
7 8 23 -6 -7 2	7 8 23 6 7 2	= 4500
13 28 24 0 0 4	13 24 28 0 4 0	— 8640
7 28 92 -8 4 12	7 23 92 12 4 2	— 14400
9 44 120 0 0 12	9 41 120 0 0 6	— 43200
27 52 136 8 24 60	19 27 136 -24 16 6	— 63504
19 28 156 24 -36 4	19 28 139 28 2 4	
39 44 44 8 12 12	39 44 44 8 12 12	
57 72 28 24 12 72	28 57 57 -42 12 12	
17 20 272 16 -32 4	17 20 257 20 2 4	
33 52 52 8 12 -12	33 52 52 -8 12 12	
9 44 284 -32 12 12	9 41 281 -38 6 6	
43 16 172 16 4 8	16 43 172 4 16 8	
27 28 208 16 -48 12	27 28 187 28 6 12	

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39 140 44 40 12 -60	39 44 111 -36 6 12
73 84 208 48 224 36	52 57 84 -12 24 36
73 112 48 0 24 56	48 73 112 56 0 24