

Re: Interesting problem on symmetric difference

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- *From:* G. Frege <nomail@invalid>
 - *Date:* Mon, 29 Jan 2007 21:38:42 +0100
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On 29 Jan 2007 23:29:23 +1100, Logan Lee <10464307@xxxxxxxxxxx> wrote:

Let's assume also that you can apply distributive law to this.

You shouldn't just assume things which have to be proved!

(It's not obvious that the distributive law holds for the delta-operation. Hence you have to prove this.)

well, distributive law was not given and i wasn't taught this (as you say this is not obvious) but i've guessed it and it occurs that at least for this case distributive law holds ;)

Hmmm...

$A \Delta (B \Delta C) = (A \Delta B) \Delta (A \Delta C) ???$

Let $A = B = C$. Then we should have (if you were right):

$A \Delta (A \Delta A) = (A \Delta A) \Delta (A \Delta A)$

for any set A . Let's see. We have:

(1) $A \Delta A = (A - A) \cup (A - A) = \emptyset \cup \emptyset = \emptyset$,

and

(2) $A \Delta \emptyset = (A - \emptyset) \cup (\emptyset - A) = A \cup \emptyset = A$,

for any set A . And as a special case:

(3) $\emptyset \Delta \emptyset = \emptyset$.

Hence (1) (2)

$A \Delta (A \Delta A) = A \Delta \emptyset = A$

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and (1) (3)

$$(A \Delta A) \Delta (A \Delta A) = 0 \Delta 0 = 0.$$

Hence

$$A \Delta (A \Delta A) = (A \Delta A) \Delta (A \Delta A)$$

would only hold for $A = 0$.

Hence in general:

$$A \Delta (B \Delta C) \neq (A \Delta B) \Delta (A \Delta C).$$

You see: "Guessing is not good enough in/for math."

F.

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E-mail: info<at>simple-line<dot>de

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