# Re: The problem of existance of countably infinite ¥ò−alebra on X.

***Source:*** http://sci.tech−archive.net/Archive/sci.math/2007−03/msg05214.html

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* *Date*: 25 Mar 2007 08:57:22 −0700

On 3Ô24|, $$Ü43„, The World Wide Wade <aderamey.a...@xxxxxxxxxxx>
wrote:

> In article <1174674313.873312.204...@xxxxxxxxxxxxxxxxxxxxxxxxxxx>,
> "Gary Cooper" <ghkrh...@xxxxxxxxxxx> wrote:
>
>> Hi !
>>
>> I intend to introduce some interesting but a bit troblesome problem
>> for you.
>>
>> The problem is this;
>>
>> "Does there exist an infinite ¥ò−algebra which has only countably many
>> members?"
>
> Hint: If x is in the underlying set, there is a smallest member of the
> sigma algebra containing x.

Thanks. With the aid of your hint, I got resolved this problem.
However, some brightening thought had occured to me. That is to use
the cardinality of R is not equal those of Q.
More precisely, arrange all member of a countable infinite sigma
algebra by indexing using Q. (A_r1, A_r2, ... of course r_i in Q)
For arbitrary a in R, there exist a rational sequence converging to a
and denote such sequence (a_n).
Consider the intersection of all A_a_n as from n=1 to inf. Denote it
A. Surely, A is also the member of above sigma algebra. If only we can
show that these A's are distinct, then there are uncountable element

of sigma algebra and it leads the contradiction.

Can you have any clever?

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