Re: Prove axiom in S5

Source: http://sci.tech−archive.net/Archive/sci.logic/2005−03/0080.html

---

From: A.S. (*pleaseposttong_at_nospamatall*)
Date: 03/01/05

Date: Tue, 01 Mar 2005 18:04:22 +0100

On 28 Feb 2005 21:34:41 −0600,
−knowledge−@excite−dot−com.no−spam.invalid (muxol) wrote:

>> A.S.wrote:
>Does anybody know how to prove the following using Natural Deduction
>> in S5 (using [] for the box, and <> for the diamond)?
>>
>> ([]A −> A), (A −> []<>A), ([]A −> [][]A) [single
>turnstile, S5] (<>A
>> −> []<>A)<>A)[/quote:6d1a1426b3]
>
>1. A −> []<>A (axiom)
>2. <>A −> []<><>A (sub instance of 1 with
><>A as the A)
>3. <><>A −> <>A (alternative axiom of []A −>
>[][]A −− see end note)
>4. <><>A −> []<><>A (2,3 by
>truth−functions)
>5. <>A −> []<>A (4 with the A as the <>A)
>

OK, I see what you mean. But haven't you just shown that <>A −> []<>A
follows from two of the axioms, I mentioned, and not all three? Your
proof shows that (A −> []<>A), ([]A −> [][]A) |− (<>A −> []<>A).
But I also wanted ([]A −> A) to figure.

Or maybe I'm wrong?

>Note:
>
>1. []A −>[][]A
>2. ~[][]A −> ~[]A (1 by truth−functions (contrapositive))
>3. <>~[]A −> <>~A (2)
>4. <><>~A −> <>~A (3)
>5. <><>A −> <>A (4)
>
>QED.
>

>
> *Posted Via Usenet.com Premium Usenet Newsgroup Services*
>----------
> *** SPEED ** RETENTION ** COMPLETION ** ANONYMITY ***
>----------
> *http://www.usenet.com*

//A.S.