ON A METHOD OF DESCRIBING FORMAL
DEDUCTIONS CONVENIENT FOR
THEORETICAL PURPOSES

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Introduction

In my paper [2], I have proposed a method of describing formal deductions which seems to be convenient for practical purposes. In my paper [3], I have employed an index-system to exactly express tree-form configurations of proofs in Gentzen's formalism for sequents. In the present paper, I would like to propose a method of describing formal deductions which seems to be convenient for theoretical purposes. The device employed for this purpose relies mostly on an index-system. Just as in [2] as well as in [3], I propose here also to denote every proposition and every denomination of a variable, or every sequent in Gentzen's formalism, by an index-word.

Although our device, to be illustrated in the present paper, can be applied to a large variety of various formalisms, I will illustrate it in the present paper by taking up two examples. The first example is Gentzen's *LK* (notation in the present paper : *GLK*). It can be applied also to Gentzen's *LJ* without any essential modification. The second example is the lower classical predicate logic *LK* in the form I have dealt with in my former papers. Our device can be naturally extended to other logics such as the intuitionistic logic, Johansson's minimal logic, the positive logic, etc.

Our index-system introduced in the present paper has the strong point for theoretical purposes, that not only the tree-form configuration of each proof is clearly denoted by the index-system but also the inference rules employed for the deduction of steps are expressed exactly and further their reference steps too can be founded out by index-words only. However, this index-system has the weak point that, for practical purposes, proof-note

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