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**THEORY OF PREHOMOGENEOUS VECTOR SPACES
(ALGEBRAIC PART)—THE ENGLISH TRANSLATION
OF SATO'S LECTURE FROM SHINTANI'S NOTE**

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Introduction

The purpose of this paper is to introduce a -functions and b -functions of prehomogeneous vector spaces in the original way of M. Sato and give a proof of the structure theorem of them. All the results were obtained by M. Sato when he constructed the theory of prehomogeneous vector spaces in 60's. However he did not write a paper on his outcomes at that time. His theory was distributed through his lectures and informal seminars. Only small number of people could know it. The only publication left for us is a mimeographed note of his lecture [Sa-Sh1] written by T. Shintani in Japanese. Sato and Shintani published the paper [Sa-Sh2] in 1974 on zeta functions associated with prehomogeneous vector spaces, but a very narrow class of prehomogeneous vector space was dealt with there. In [Sa-Sh1], Sato gave the exact definitions of a -functions and b -functions for a wider class of prehomogeneous vector spaces and gave a remarkable theorem of their structures. But it seems to have been forgotten for a long time.

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