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**Kazuya Tohge** (tohge@t.kanazawa-u.ac.jp), Faculty of Technology, Kanazawa university,  
2-40-20 Kodatsuno, Kanazawa, 920-8667, JAPAN, and. *Value distribution of meromorphic  
solutions to the functional equation  $f^n + g^n + h^n \equiv 1$  when  $n \leq 6$*

By applying Cartan's second main theorem of Nevanlinna theory for hyperplanes in complex projective space, Hayman showed that for  $n \geq 9$ , there do not exist three nonconstant meromorphic functions  $f$ ,  $g$ , and  $h$  that satisfy  $f^n + g^n + h^n \equiv 1$ . Green and Toda also proved the similar results. For  $n \leq 6$ , Green, Gross ( $n = 4$ ), Gundersen ( $n = 5, 6$ ) and others ( $n \leq 4$ ) gave examples of meromorphic solutions to this functional equation. Some of them, e.g. Green's solution for  $n = 4$ , show that Cartan's inequality is sharp in a sense, but some do not, which is quite similar to the relationship between Nevanlinna's inequality and Baker, Gross and Iyer's solutions of the equation  $f^n + g^n \equiv 1$  when  $n \leq 3$ .

In this talk we will observe the value distribution of these known meromorphic solutions of  $f^n + g^n + h^n \equiv 1$  and present other examples to discuss the sharpness of Cartan's estimate, especially when  $n = 5$ . Some related topics will be discussed also. (Received September 25, 2000)