

## CHAPTER III

### Jacobian theta functions and Differential Equations

Introduction	ix
<u>IIIa: An Elementary Construction of Hyperelliptic Jacobians</u>	
§0. Review of background in algebraic geometry	3.1
§1. Divisors on hyperelliptic curves	3.12
§2. Algebraic construction of the Jacobian of a hyperelliptic curve	3.28
§3. The translation-invariant vector fields	3.40
§4. Neumann's dynamical system	3.51
§5. Tying together the analytic Jacobian and algebraic Jacobian	3.75
§6. Theta characteristics and the fundamental Vanishing Property	3.95
§7. Frobenius' theta formula	3.106
§8. Thomae's formula and moduli of hyperelliptic curves	3.120
§9. Characterization of hyperelliptic period matrices	3.137
§10. The hyperelliptic $\wp$ -function	3.155
§11. The Korteweg-deVries dynamical system	3.177
<u>IIIb: Fay's Trisecant Identity for Jacobian theta functions</u>	
§1. The Prime Form $E(x,y)$	3.207
§2. Fay's Trisecant Identity	3.214
§3. Corollaries of the Identity	3.223
§4. Applications to solutions of differential equations	3.239
§5. The generalized Jacobian of a singular curve and solutions	3.243
<u>IIIc: Resolutions of Algebraic Equations by Theta Constants, by Hiroshi Umemura</u>	
	3.261
Bibliography	3.271