

Riemann surfaces and algebraic curves, Exercise session 5

Let $\Lambda = \mathbb{Z}\tau_1 + \mathbb{Z}\tau_2$ be a lattice in \mathbb{C} and let \wp be the Weierstrass \wp -function for the lattice Λ .

(Exercise 1) Show that \wp' and \wp'' do not have common zeros.

(Exercise 2) Describe in a neighbourhood of 0 the functions $\wp, \wp', \wp'', \wp^2, \frac{\wp'}{\wp^2}, \frac{\wp''}{\wp^2}$ in the form $F(z) = a_k z^k (1 + a_{k+1}z + \dots)$ with $a_k \neq 0$ describing explicitly only a_k .