

# ALGEBRAIC RESULTS FOR THE VALUES $\vartheta_3(m\tau)$ AND $\vartheta_3(n\tau)$ OF THE JACOBI THETA-CONSTANT

Carsten Elsner, Florian Luca and Yohei Tachiya

(submitted paper)

Let  $\vartheta_3(\tau) = 1 + 2 \sum_{\nu=1}^{\infty} e^{\pi i \nu^2 \tau}$  denote the classical Jacobi theta-constant. In this paper, we prove that the two values  $\vartheta_3(m\tau)$  and  $\vartheta_3(n\tau)$  are algebraically independent over  $\mathbb{Q}$  for any  $\tau$  such that  $q = e^{\pi i \tau}$  is an algebraic number, where  $m, n \geq 2$  are distinct integers.

**2010 MS Classification numbers:** 11J85, 11J91, 11F27

**Key Words:** Algebraic independence, Jacobi theta-constants, Modular functions