Peter L. Walker

The Distribution of the Zeros of Jacobian Elliptic Functions with Respect to the Parameter k

CMFT 9 No.2 (2009), 579–591. [ISSN 1617-9447]

Abstract. We investigate the distribution of the zeros of the twelve Jacobian elliptic functions $\mathrm{sn}(z,k)$, etc. as functions of k for fixed z. We show that the number of zeros inside a disc given by $|k| \leq r$ is approximately of order r^2 and hence that the mapping $k \mapsto \mathrm{sn}(z,k)$ is of order 2.

Keywords. Elliptic functions, Jacobian functions, distribution of zeros.

2000 MSC. 30D15, 33E05.

Received. March 31, 2008, in revised form December 31, 2008.

Published online. March 23, 2009.