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**yaacov kopeliovich\***, MEAG NY 540 Madison Avenue, New York, NY 10022. *Towards Thomae formula for general cyclic covers of the Sphere.* Preliminary report.

Let  $f : X \mapsto CP^1$  be a cyclic cover of the sphere of degree  $N$ . Assume that  $X$  is ramified above  $m$  points,  $\lambda_1 \dots \lambda_m$ . Let  $\theta[e](z, \tau)$  be a  $g$  dimensional theta function attached to  $X$  and  $g$  is the genus of  $X$ . We show how an application of Riemann theorem on the theta divisor produces  $e \in R^{2g}$  such that  $\theta[e](0, \tau_X) \neq 0$  where  $\tau_X$  is the period matrix of  $X$ . For these  $e$  we conjecture a formula that express  $\theta[e](0, \tau_X)$  as a polynomial in  $\lambda_1 \dots \lambda_m$ . We sketch the connection with representation theory of symmetric groups and its applications to compute dimensions of the theta functions given above in certain examples. (Received August 07, 2009)