962-11-1235 **David R Grant*** (grant@boulder.colorado.edu), Department of Mathematics, University of Colorado at Boulder, Campus Box 395, Boulder, CO 80309-0395, and **John Boxall**, Departement de Mathematiques et de Mechanique, CNRS Upresa 6081, Universite de Caen, Boulevard Marechal Juin, B. P. 5186, 14032 Caen, France. *Generalized Jacobi's derivative formulas and singular torsion on elliptic curves.* Preliminary report.

We report on various relations between theta functions and torsion points on certain algebraic groups. In particular, we consider modular forms f_n which are products of derivatives at 0 of theta functions with rational characteristics of order n, and show that f_n vanishes at the period matrix τ of an elliptic curve E precisely when E has a special point of order n we call a "singular" torsion point. The singular torsion points on E are related to torsion points on the image of E embedded in a certain generalized Jacobian, and from a result of Hindry we find that only finitely-many of the f_n vanish for any given τ. When E is defined over a number field, we describe a procedure which in principle can determine all the singular torsion on E. (Received October 02, 2000)