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**Tim Huber\*** ([hubertj@utpa.edu](mailto:hubertj@utpa.edu)), University of Texas-Pan American, Department of Mathematics, Edinburg, TX 78539. *Differential equations for cubic theta functions.*

We show that the cubic theta functions satisfy two distinct coupled systems of nonlinear differential equations. The resulting relations are analogous to Ramanujan's differential equations for Eisenstein series on the full modular group. Both systems are deduced by elementary means from trigonometric series identities arising in Ramanujan's original paper on Eisenstein series. We use the differential equations to give a short proof of a famous cubic theta function identity derived by J. and P. Borwein. (Received September 22, 2010)