1051-34-106 **John V. Baxley*** (baxley@wfu.edu), Box 7388, Winston-Salem, NC 27109. *Existence of Solutions for a Class of Singular Nonlinear Third Order Boundary Value Problems.* Preliminary report.

We consider a class of third order boundary value problems of the form

$$y''' = f(y, y', y''), \quad 0 < t < \infty,$$

$$y(0) = 0, \;\; y'(0) = a, \;\; \lim_{t\to\infty} y'(t) = b.$$

We provide conditions on f which guarantee the existence of a unique solution; qualitative properties of the solution are included. The work was motivated by the example $f(y, y', y'') = -yy'' + (y')^2 - b^2$, with $a = 1$, studied in in a 2007 paper by Paullet and Weidman, in which the authors showed that the problem arises in the analysis of stagnation point flow toward a stretching sheet. (Received August 20, 2009)