

16.120 Compressible Flow**Problem Set # 3****Assigned: April 8, 2003****Due: April 10, 2003**

Using a Navier-Stokes formulation, derive the set of governing first order, non-linear differential equations and interpret the physical meaning of the internal structure of a normal shock wave. Consider appropriate limiting cases. Using asymptotic expansions, show that in the temperature-velocity phase plane that the singular points corresponding to the initial and final states of the internal structure are respectively a node and a saddle point.