Homework III: AE302, High-speed Aerodynamics

Feb. 18 2009

Due: Feb. 25, 2009(beginning of class)

Problem 1

Problem 8.3. (Answer SI units!)

Problem 8.5. Also determine p^*, T^* and M^* in the test section.

Problem 2

To determine the Mach number in the test section of a supersonic wind tunnel, we measure the following:

- the static pressure in the test section , p.
- the total pressure in the pressure tank (or reservoir), p_t.

We assume that the pressures are measured accurately and we assume an adiabatic process between the reservoir and the test section. Non-isentropic effects are occurring, however. If the measured p/p_t=0.095, what can we say about the Mach number in the section?