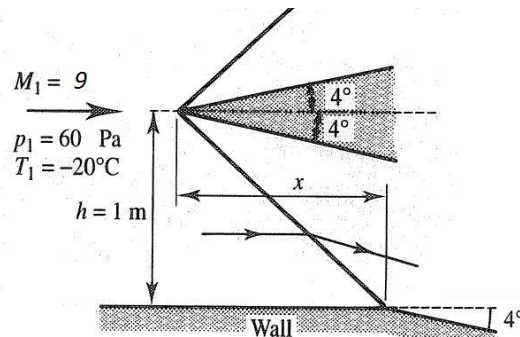
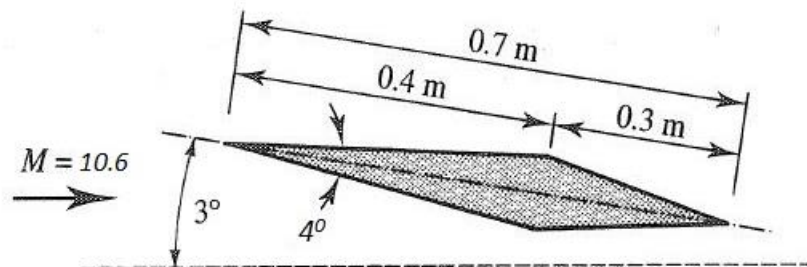


AE 624 – Tutorial 2

- Air flows down a wide tunnel at a Mach number of 9.8 with a pressure of 120 Pa and a temperature of -45°C . The upper wall of this channel turns through an angle of 5° away from the flow leading to the generation of an expansion wave. Find the pressure, Mach number and temperature behind this expansion wave.
- Consider the fig below



- Find the lift per meter span for the wedge shaped airfoil shown in fig. Also sketch the flow pattern about the airfoil. The Mach number and the pressure ahead of the airfoil are 10.6 and 400 Pa respectively.



- A simple wing may be modeled as a 0.25 m wide flat plate set at an angle of 3° to an air flow at a Mach number of 8.5. The pressure in this flow being 60 Pa. Assuming that the flow over the wing is two-dimensional, estimate the lift and drag force per meter span due to the wave formation on the wing. What other factor causes drag on the wing.

