

Problem 2

- (a) Write out a detailed methodology for the solution of flow around an axisymmetric cone with a sharp nosetip.
- (b) Plot shock half angle θ_s vs. cone half angle θ_c for $M_\infty = 1.25, 2.0, 6.0$, and 10.0
- (c) Repeat part (b) but include results for a wedge with the same shock angles. Explain why you observe these differences between cones and wedges.
- (d) Plot the Mach number at the cone surface, M_c , vs. cone half angle θ_c for $M_\infty = 1.25, 2.0, 6.0$, and 10.0 .
- (e) Assuming an angle of attack of 0° and $\gamma = 1.4$, use the given flight data to recreate the Taylor-Maccoll plot from the left plot in Fig. 22.
- (f) Describe how the Taylor-Maccoll code could be used to estimate the angle of attack of the flight vehicle.