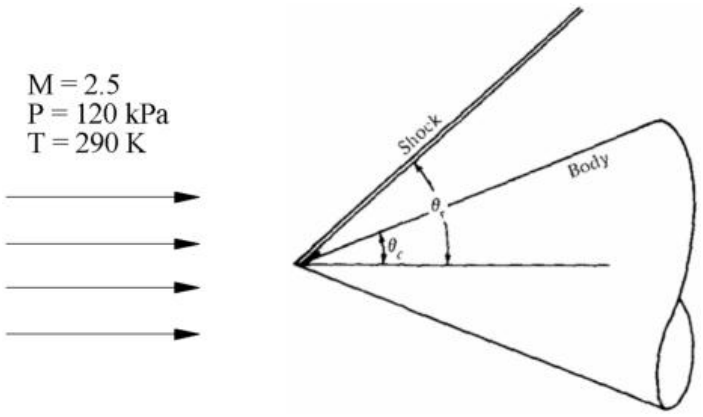
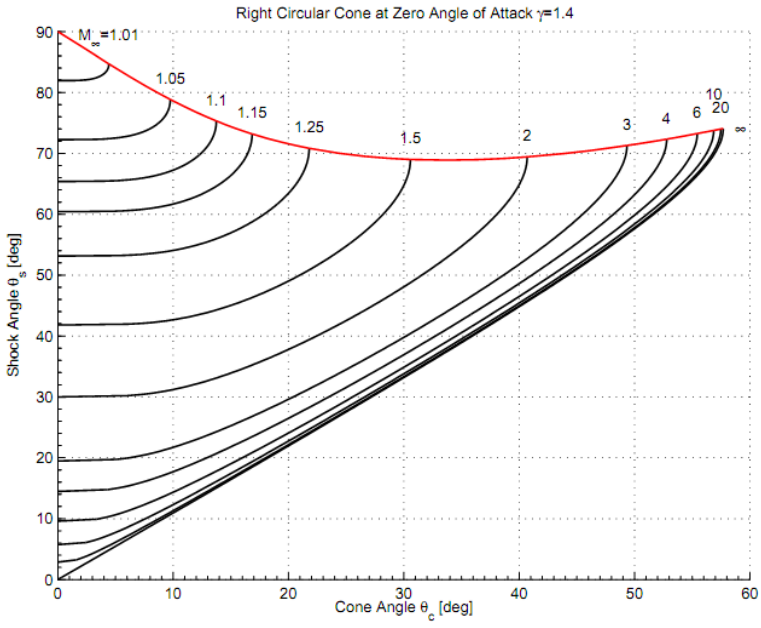
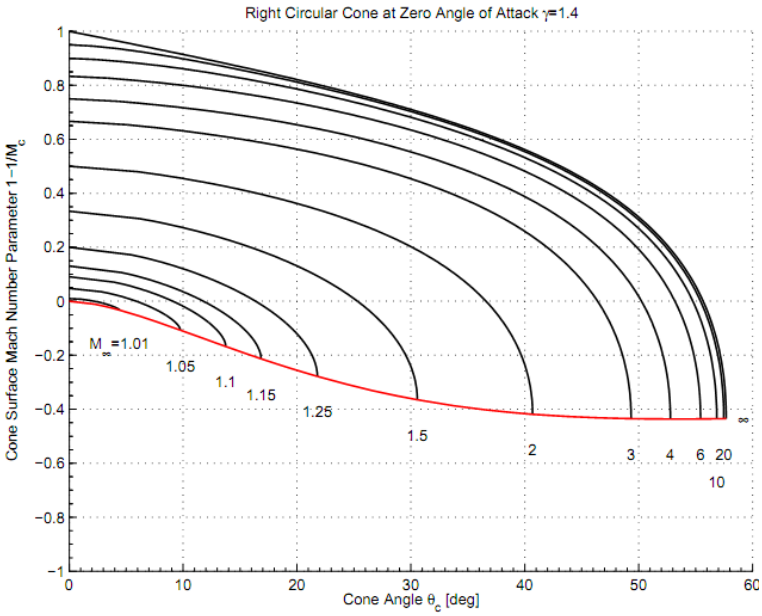
Consider a 20° half-angle cone at zero angle of attack. Free stream condition is $M_\infty = 2.5, P_\infty = 120\,\text{kPa}, T_\infty = 290\,\text{K}$. Using present charts find:

a) the shock angle,
b) p, T, M immediately behind the shock,
c) p, T, M on the cone surface,
d) the $M_\infty$ below which the flow is detached for this cone,
e) compare the surface temperature and pressure for this cone to a wedge with the same half-angle and upstream condition.
f) Solve Taylor-Maccoll equation and plot Mach number distribution. Check obtained Mach number on the cone surface with that of (c).




Right Circular Cone at Zero Angle of Attack γ=1.4
Cone Surface Mach Number Parameter 1−1/M_c
Cone Angle θ_c [deg]
M_∞=1.01
1.05
1.1
1.15
1.25
1.5
2
3
4
6
20
10
∞
1
0.8
0.6
0.4
0.2
0
−0.2
−0.4
−0.6
−0.8
−1
0
10
20
30
40
50
60