

## Prandtl-Meyer Expansion

The change in Mach number for an isentropic expansion through turning angle  $\theta$  is given by:

$$\theta = v(\text{Ma}_2) - v(\text{Ma}_1)$$

where the Prandtl-Meyer function  $v$  is

$$v(M) = \sqrt{\frac{\gamma+1}{\gamma-1}} \tan^{-1} \left\{ \sqrt{\frac{\gamma-1}{\gamma+1}} (M^2 - 1) \right\} - \tan^{-1} \sqrt{M^2 - 1}$$

$\gamma$  is the ratio of specific heat capacities.