Computational Fluid Dynamics (AE/ME 339)
MAEEM Dept., UMR, Fall 2001

Home Work Problem 10

For the nozzle shown in the figure use the following transformation to map it into a rectangular domain. The nozzle wall is represented by $y_{max} = x^2$.

$$\xi = x, \eta = \frac{y}{y_{max}}$$

Determine numerical values of ξ_x, ξ_y, η_x, η_y at the point $\xi = 1.5$, $\eta = 0.5$,

i) analytically
ii) numerically using central differencing.

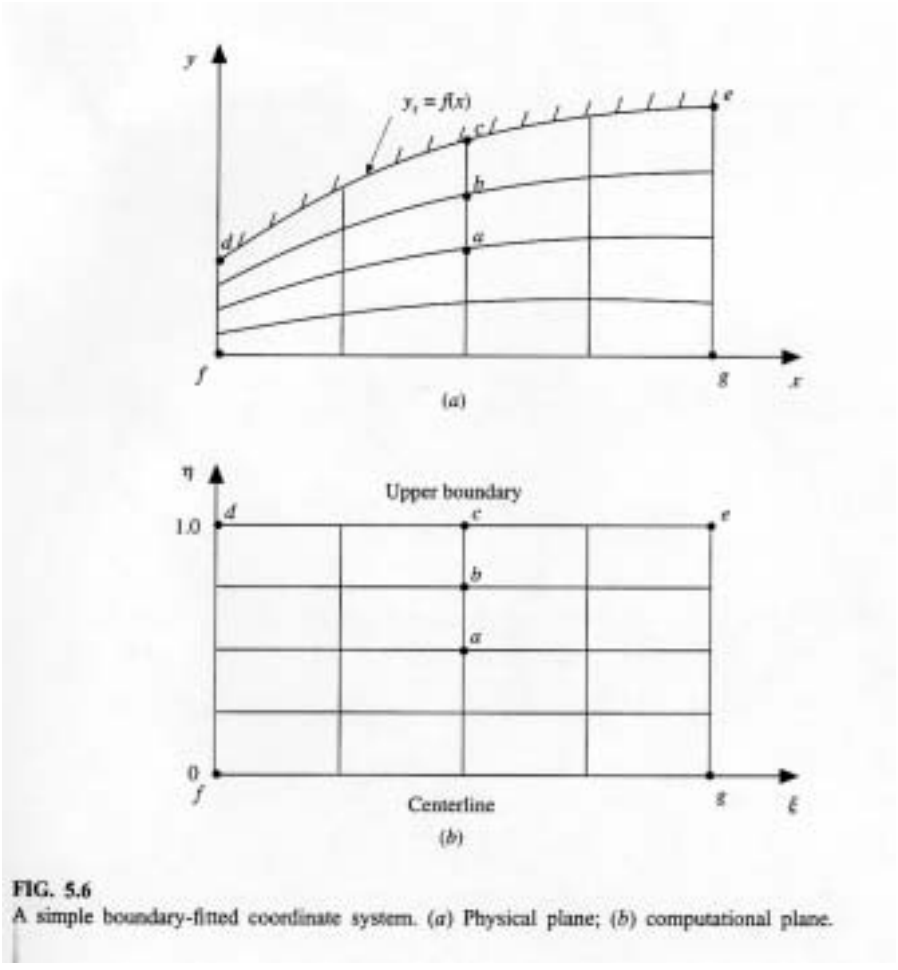

FIG. 5.6
A simple boundary-fitted coordinate system. (*a*) Physical plane; (*b*) computational plane.