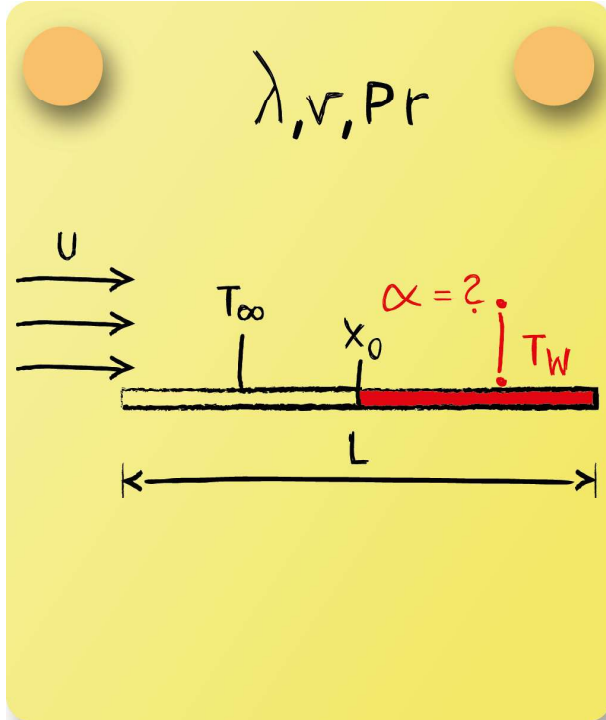


## Heat Transfer Correlation 3.3



A fluid streams over a flat plate. The plate is heated from  $x_0$ . Calculate the mean heat transfer coefficient  $\bar{\alpha}$ .

Reynolds number:

$$Re_L = \frac{u \cdot L}{\nu} = 3.38 \cdot 10^4$$

Nusselt number:



$$Nu_L = 0.664 \cdot Re_L^{\frac{1}{2}} \cdot Pr^{\frac{1}{3}} \frac{\left[1 - \left(\frac{x_0}{L}\right)^{\frac{3}{4}}\right]^{\frac{2}{3}}}{\left[1 - \frac{x_0}{L}\right]} = 259.72$$

Heat transfer coefficient:

$$\bar{\alpha} = \frac{Nu_L \cdot \lambda_f}{L} = 16 \text{ W/m}^2\text{K}$$