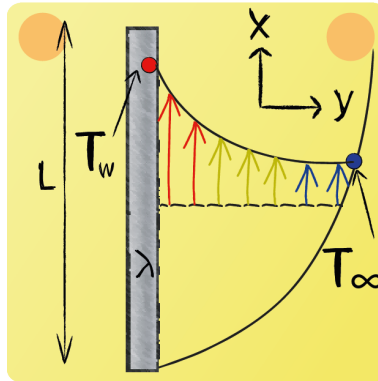


Lecture 3 Question 5

An isothermal heat-emitting surface in a quiescent environment (=no forced fluid flow) with laminar flow exchanges heat with the environment. Which correlation can be used for determining the rate of heat transfer?



$$\overline{Nu}_L(Gr_L, Pr) = 0,677 \cdot \left(\frac{Pr}{0,952 + Pr} \right)^{1/4} (Gr_L \cdot Pr)^{1/4}$$

As there is no forced fluid flow in the given situation, natural convection will be dominant. Therefore a correlation in terms of the Grashof number Gr_L and the Prandtl number Pr has to be used.