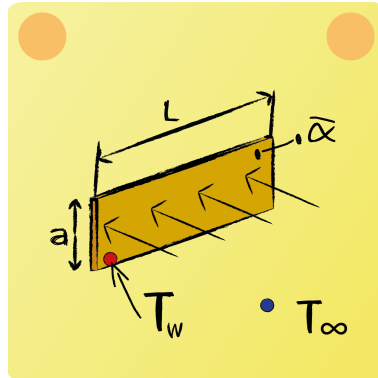


Lecture 6 Question 5.5

Give an expression for the rate of heat transfer \dot{Q} . Assume steady-state heat transfer and the body to have a homogeneous temperature and neglect heat transfer at the sides.



Rate of heat transfer by convection:

$$\dot{Q} = \bar{\alpha} \cdot A_s \cdot (T_w - T_\infty)$$

Surface area (the top and bottom side are way much thinner and are thus neglected):

$$A_s = 2 \cdot a \cdot L$$