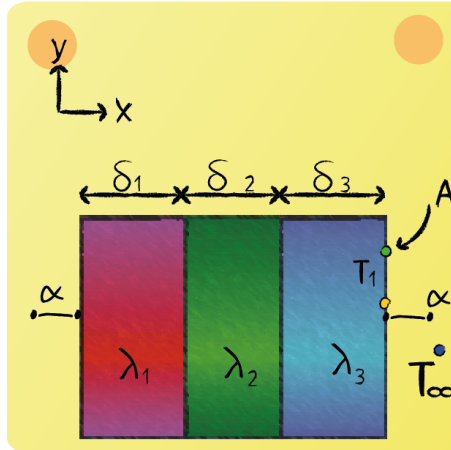# Lecture 7 Question 8

Give an expression for the rate of heat transfer inside the system.

Rate of heat transfer through a multi-layer wall with convection:

$$\dot{Q} = \frac{T_A - T_B}{\frac{1}{\alpha_A \cdot A} + \sum_{i=1}^{n} \frac{\delta_i}{\lambda_i \cdot A} + \frac{1}{\alpha_B \cdot A}}$$

Between T_1 and T_∞ we have only 1 layer of convection.

And thus:

$$\dot{Q} = \frac{T_1 - T_\infty}{\frac{1}{\alpha \cdot A}}$$