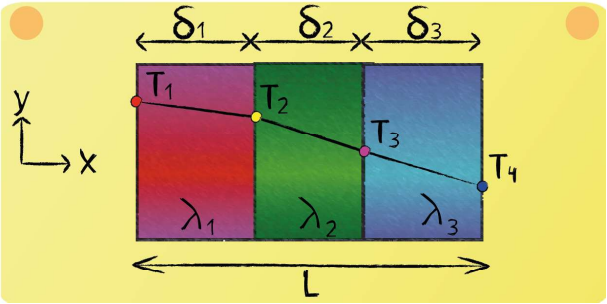
Lecture 4 - Question 6



Give a description for the heat flux passing the multi-layer wall. Assume one-dimensional steady-state heat transfer in x-direction. Only use the given parameters.

Fourier's law:

$$\dot{Q} = -\lambda A \frac{\partial T}{\partial x}$$

Using Fouriers law and keeping in mind that the heat passing each layer should equal each other:

$$\dot{Q} = -\lambda_1 A \frac{1}{\delta_1}(T_2 - T_1)$$

$$\dot{Q} = -\lambda_2 A \frac{1}{\delta_2}(T_3 - T_2)$$

$$\dot{Q} = -\lambda_3 A \frac{1}{\delta_3}(T_4 - T_3)$$