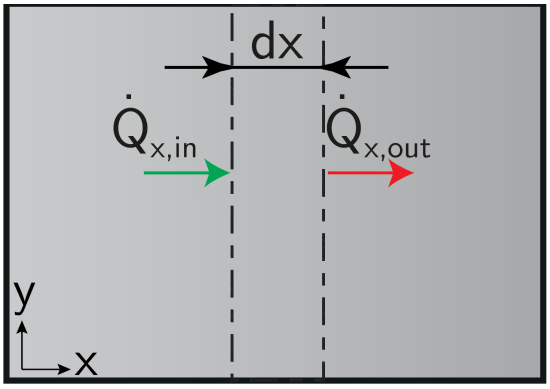
Boundary Conditions - Cond. - IE 3

A wall is losing heat to the environment. Assume one-dimensional steady-state heat without a source. Give the correct boundary conditions to solve the given differential equation.



Given the differential equation:

$$0 = \lambda \frac{\partial^2 T}{\partial x^2}$$

In order to solve the differential equation, two boundary conditions are required. This can be seen from the fact that the variable T has been differentiated twice with respect to x.

Boundary conditions:

$$T(x = 0) \;=\; T_1$$

$$T(x = L) \;=\; T_2$$

The boundary conditions above describe that the temperature of the wall equals T_1 on the left side and T_2 on the right side, as can be seen in the sketched situation.