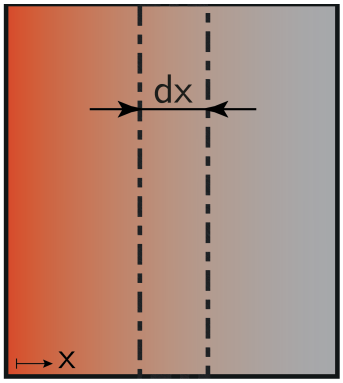
Control Volume - Cond. - IE 15

A wall with a source is adiabatic on the left-hand side. Assume its surface temperatures to be homogeneous at all times. Pick the correct control volume for setting up the energy balance to calculate the temperature profile inside the wall. If needed, also define the coordinate system.



The temperature profile in a body can be determined by solving the heat equation. The heat equation yields from setting up an energy balance of an infinitesimal element inside the relevant body.

The temperature only changes when moving from left to right, which we will as the x-direction. Therefore a one-dimensional infinitesimal element in Cartesian coordinates is suitable for solving the problem.