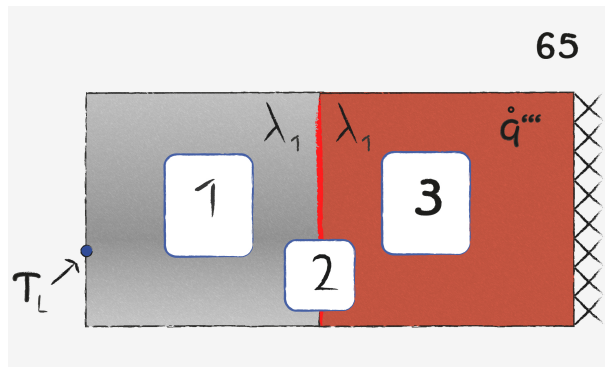




Heat Conduction: Task 65



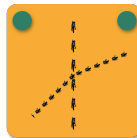
The image illustrates a body with constant thermal conductivity. The temperature is prescribed on the left side and an adiabatic boundary condition is on the right side. In addition, a volumetric heat source exists in the left side of the body.

1



All the generated heat needs to be transferred through the left compartment by conduction. The temperature profile is linearly increasing from left to right.

2



Although the thermal conductivities are equal, there is a sudden increase in the heat flux due to the line source for which the temperature gradient increases from the right to the left side.

3



The increasing heat flux due to the heat source causes an increasing temperature gradient from the right adiabatic side to the left side. Due to the adiabatic side, the temperature gradient there is zero.