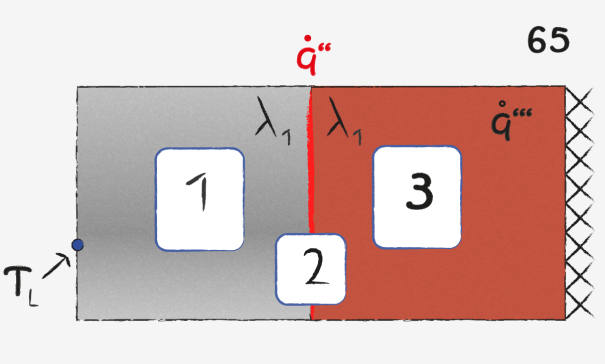
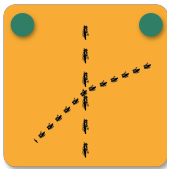
Heat Conduction: Task 65



The image describes a body consisting of two sections with a sheet shaped heat source in between as well as a volumetric heat source within the second section. Cross section area and thermal conductivity is constant throughout the entire body.

1 

Due to the given heat sources and the adiabatic boundary condition at the right it is obvious that heat is conducted towards the left within the whole body, yielding a positive temperature gradient. As Thermal conductivity and cross section area are constant, temperature profile is increasing linearly.

2 

Temperature profile is steeper at the left side of the transition, since more heat is transfered due to the heat source while thermal conductivity is equal on both sides.

3 

The volumetric heat source causes the heat flux to increase towards the left and such the magnitude of temperature gradient. As the right boundary is adiabatic, temperature gradient vanishes at the very right.