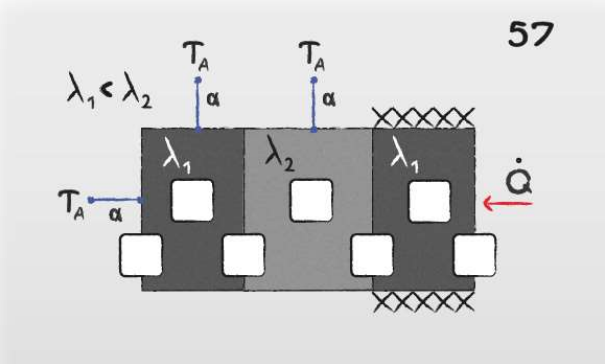
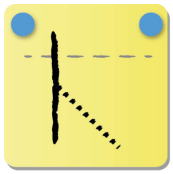
Axial Heat Flux: Task 57



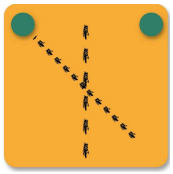
The image describes a rectangular body consisting of three sections. Walls are convective in sections 1 and 2. There is an imposed heat flux at the right boundary, remaining walls of the right section are adiabatic.

1 

Due to convective heat loss, the heat flux and it's gradient are negative at the left boundary.

2 

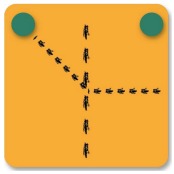
As temperature delta is increasing towards the right, the specific heat flux and it's gradient is so too.

3 

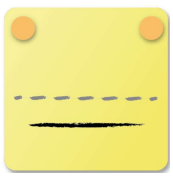
At the transition thermal conductivity changes, which is without effect on the level or slope of specific heat flux.

4 

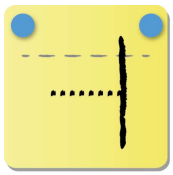
The profile of specific heat flux continues it's progression described in the section before.

5 

The transition is characterized by a kink, caused by the end of the convective heat transfer.

6 

Specific heat flux remains constant, since cross section area does not change in this section, just as the overall heat flux stays constant.

7 

The negative sign is due to the given orientation of the imposed heat flux towards the left.