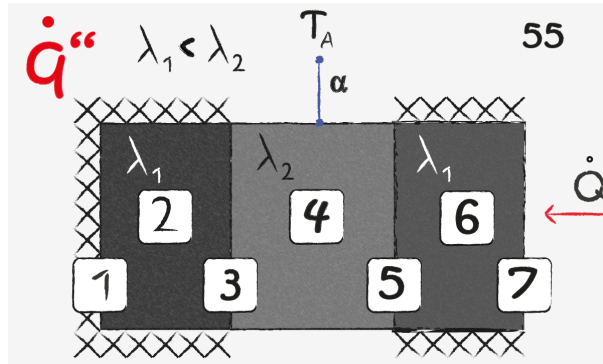


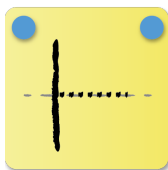


Axial Heat Flux: Task 55



The image describes a rectangular body consisting of three sections. Walls are convective in section 2 and there is an imposed heat flux at the right boundary. Remaining surfaces are adiabatic.

1



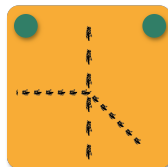
Adiabatic walls indicate, ...

2



... that there is no heat flux in the left section.

3



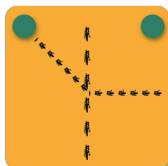
A kink in specific heat flux is caused by convective heat transfer, that is present right from the point of transition.

4



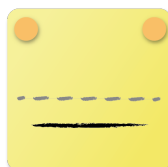
As temperature delta is increasing towards the right, the specific heat flux and it's gradient is so too.

5



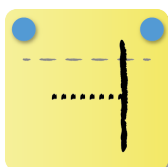
The transition is characterized by another kink, caused by the end of the convective heat transfer.

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.