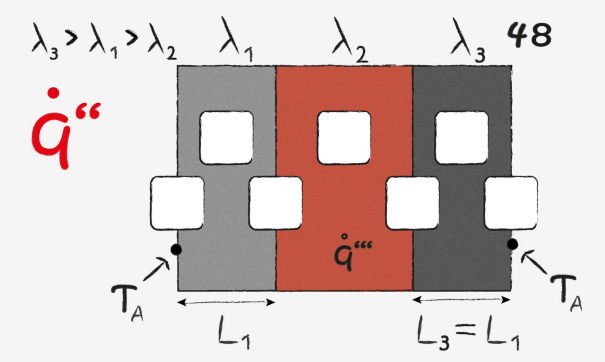
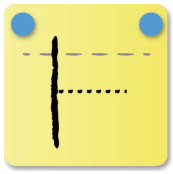
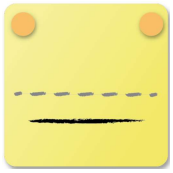
Axial Heat Flux: Task 48



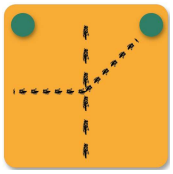
The image describes a wall consisting of three sections with different thermal conductivities. The central section contains a volumetric heat source. Length of section 1 and 3 are equal, just as the ambient temperatures at the boundaries.

1 

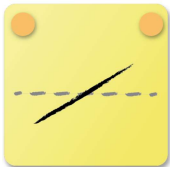
The heat source and equal ambient temperatures are indicating that heat is conducted from section 2 to sections 1 and 3. Therefore the specific heat flux is negative at the left boundary.

2 

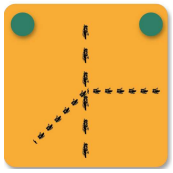
In section 1 neither heat sources/sinks cause a change in heat flux, nor does the cross section area change. That is specific heat flux is constant.

3 

The transition is marked by a kink in specific heat flux, since heat is produced in section 2.

4 

The volumetric heat source leads to a linear increase of specific heat flux. Since heat is also conducted to section 3, the profile crosses the axis in this section.

5 

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

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Specific heat flux remains constant for the same reasons as in section 1 ...

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