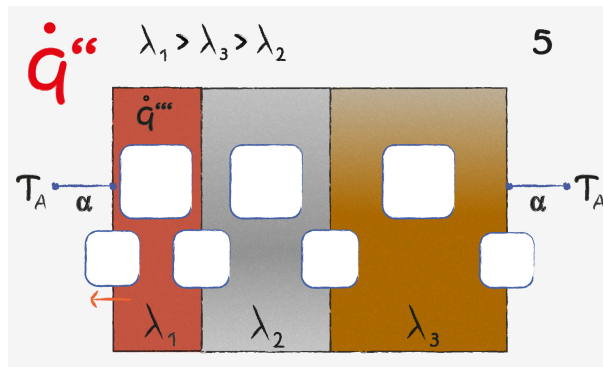




Axial Heat Flux: Task 5



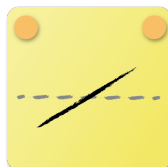
The image describes a multilayered rectangular body containing a volumetric heat source on the left side. Convective heat transfer is present at the left and right boundary with equal ambient temperatures.

1



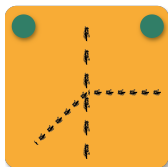
The red arrow at the left boundary indicates a heat flux from left to right, such that the specific heat flux is negative. The positive gradient is caused by the volumetric heat source.

2



Since the ambient temperatures are equal, convection acts as a heat sink on both sides. The volumetric heat source causes the specific heat flux to increase linearly. The interception of the axis marks the position from where heat is conducted to the right.

3



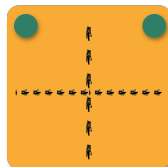
The transition is characterized by a kink from increase to constant, since it marks the end of the heat source.

4



From here on neither heat sources and sinks nor changes in cross-section area cause the specific heat flux to change.

5



Therefore it remains constant all the way to the right boundary.

6



7

