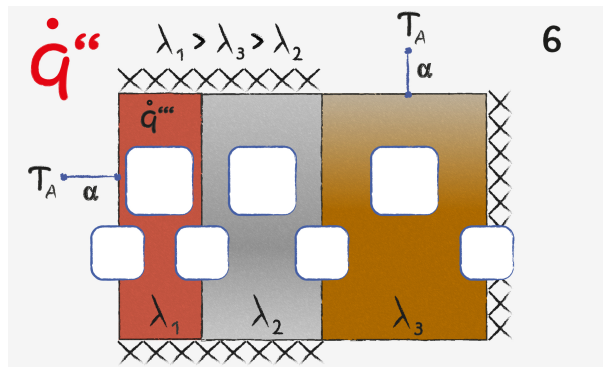# Axial Heat Flux: Task 6

The image describes a multilayered rectangular body containing a volumetric heat source on the left side. Convective heat transfer is present at the left of section 1 and top and bottom of section 3. Ambient temperatures are equal.
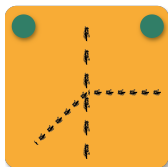
1 Since the ambient temperatures are equal, convection acts as a heat sink on both sides. Hence the specific heat flux is negative. The positive gradient is caused be the volumetric heat source.
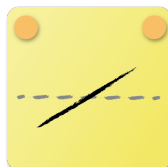
2 The volumetric heat source causes the specific heat flux to increase linearly. The interception of the axis marks the position from where heat is conducted to the right.
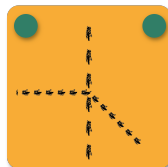
3 The transition is characterized by a kink from increase to constant, since it marks the end of the heat source.

4 Constant cross section area and adiabatic boundaries at bottom and top lead to a constant specific heat flux.

5 From section 2 to section 3 boundary conditions change to convective, which causes the specific heat flux to decrease.

6 The slope increases, meaning that due to decreasing temperature difference, less heat is transfered by convection towards the right side.

7 Heat flux decreases due to convection and vanishes at the adiabatic boundary.