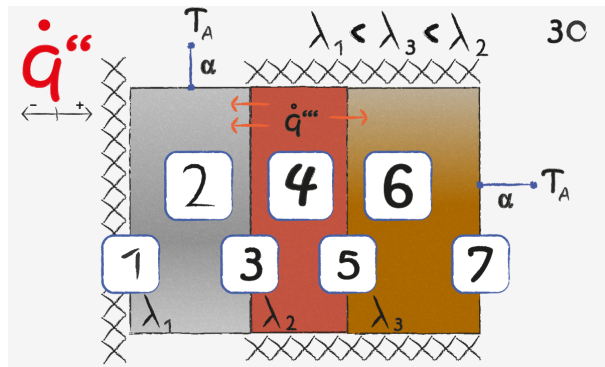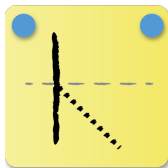# Axial Heat Flux: Task 30

The image describes a rectangular body consisting of three sections with different thermal conductivities. The central section contains a volumetric heat source. The left wall and top and bottom walls of sections two and three are adiabatic, remaining boundaries are convective.

1 Due to the adiabatic wall, no heat is conducted at the left boundary and the heat flux vanishes.

2 The convective boundary yields a negative heat flux, since heat from the heat source is partially conducted towards the left. The absolute gradient increases due to higher temperature difference towards the right.
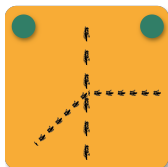
3 The transition is characterized by a kink from constant to increase, since it marks the beginning of the heat source.

4 The volumetric heat source yields a linearly increasing specific heat flux.
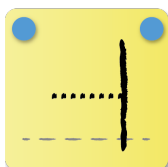
5 The transition is characterized by a kink from increase to constant, since it marks the end of the heat source.

6 Constant cross section area and adiabatic walls lead to a constant specific heat flux.

7 Heat flux remains at a constant level to the right boundary, where heat is transported via convection.