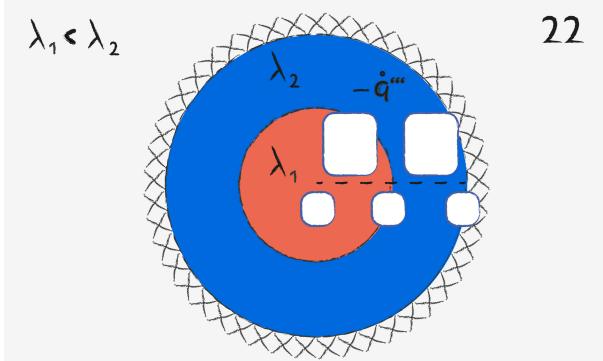




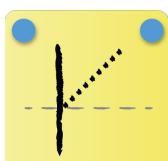
Axial Heat Flux: Task 22



22

The image describes a cylindrical body consisting of two layers of infinite expansion. The inner compartment contains a volumetric heat source while the outer compartment contains a volumetric heat sink.

1



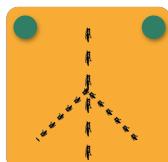
Due to symmetry reasons, the specific heat flux at the center is zero.

2



The volumetric heat source causes the specific heat flux to increase linearly.

3



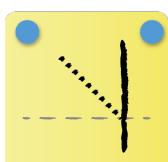
The transition is characterized by a kink in specific heat flux, as it marks the ending of the volumetric heat source and beginning of the volumetric heat sink.

4



The volumetric heat sink causes the specific heat flux to decrease proportional to $r - \frac{r_i^2}{r}$, where r_i describes the radius of the inner compartment.

5



Since the outer wall is adiabatic, the heat flux approaches zero at the boundary.