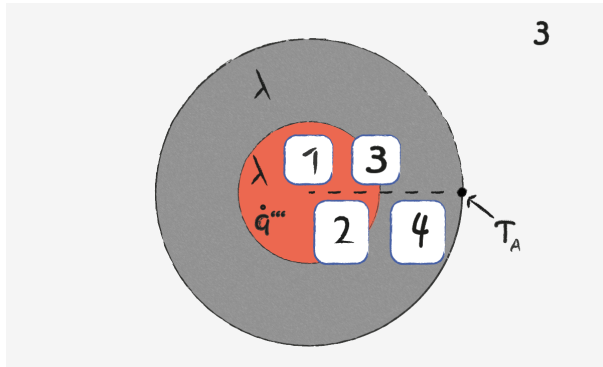
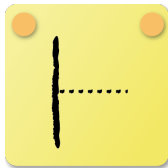


Heat Conduction: Task 3



The image describes a cylindrical body of infinite extension. The inner compartment has a heat source.

1



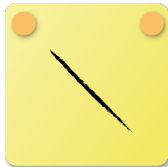
Due to symmetry reasons, the temperature gradient in the center of the pipe is zero.

2



To meet the condition in the center, the temperature gradient is zero (left side). Due to the constantly increasing heat flux (heat source), the temperature gradient increases constantly with the radius.

3



The inner and outer material have the same thermal conductivity so the temperature gradient at the interface is the same.

4



The area increases with the radius so the temperature gradient will decrease with the radius.