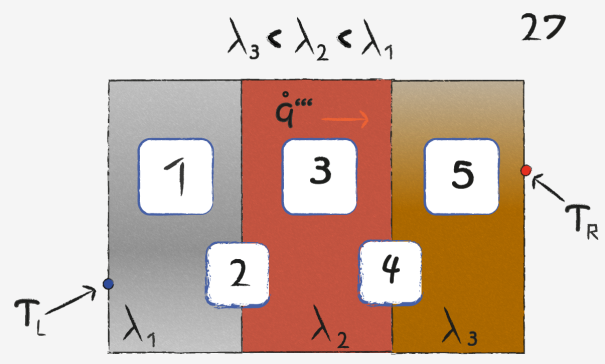
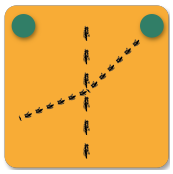
Heat Conduction: Task 27



The image describes a rectangular body with three different heat conductivities and homogenous heat production in the middle part with heat flowing from left to right. The temperature on the right side is higher than on the left side.

1 

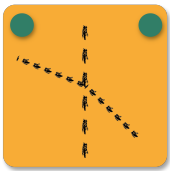
According to Fourier's law. At constant area and heat conductivity the temperature gradient decreases linearly from right to left.

2 

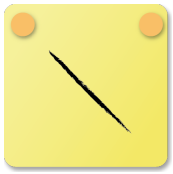
λ_2 is smaller than λ_1 which means the Temperature gradient in 2 is steeper than in 1.

3 

Due to the heat production and the heat flow from the right side, there must be a maximum in the 2nd area and because the thermal resistance of 1st area is smaller than that of the 3rd area (λ_1 is larger than λ_3) so the heat flow in the direction of area 1 is larger and therefore the temperature gradient is steeper to the left side

4 

λ_3 is smaller than λ_2 which means the Temperature gradient in 3 is steeper than in 2.

5 

According to Fourier's law. At constant area and heat conductivity the temperature gradient decreases linearly from left to right (heat flows from left to right as shown in the image).