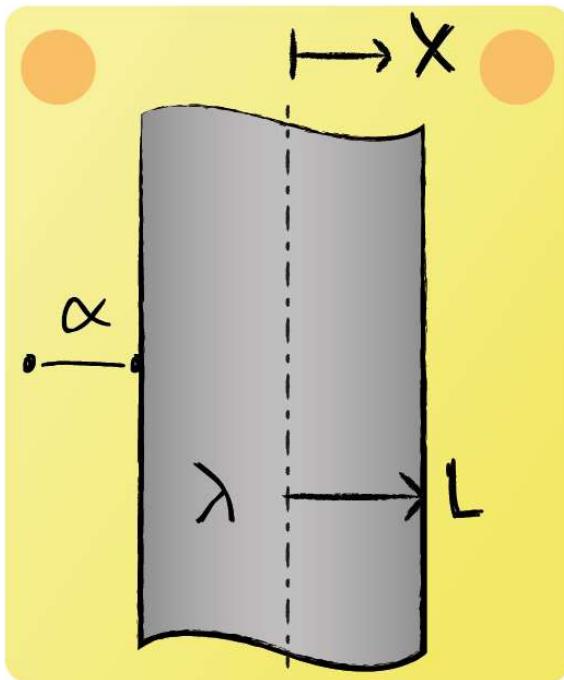


Lecture 10 - Question 5



A sheet made out of aluminum is cooling down. It has a thermal conductivity of $\lambda = 200 \text{ W/mK}$. Besides it has a characteristic length of $L = 0.01 \text{ m}$ and a convective heat transfer coefficient of $\alpha = 20 \text{ W/m}^2\text{K}$. Which statement is true?

Since $Bi \ll 1$, as x increases the drop of the temperature profile inside the body is negligible relative to the drop of the temperature profile outside the body.



$$Bi = \frac{\alpha \cdot L}{\lambda} = \frac{20 \cdot 0.01}{200} = 1 \cdot 10^{-3}$$

$Bi \ll 1$, implying that the temperatures inside the body will not vary significantly relative to the temperature profile outside the body.