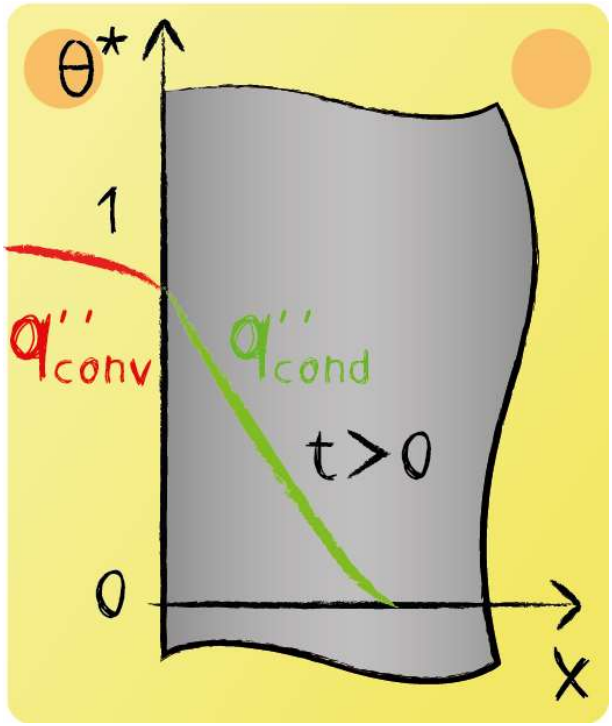
Lecture 16 - Question 3



Consider the following semi-infinite body where heat transfer on the outside is not neglected. Which boundary conditions are applicable?

$$\left.\begin{array}{r} t > 0 \\ x \to \infty \end{array}\right\} T = T_0$$

States that the body temperature for x→∞ equals the initial body temperature. This can be seen from the fact that for x→∞, $\theta^* = \frac{T-T_0}{T_A-T_0} = 0$

$$\left.\begin{array}{r} t > 0 \\ x = 0 \end{array}\right\} \left.\frac{\partial T}{\partial x}\right|_{x=0} = \frac{\alpha}{\lambda}\left(T_{x=0} - T_A\right)$$

Results from the fact that $q''_{conv} = q''_{cond}$