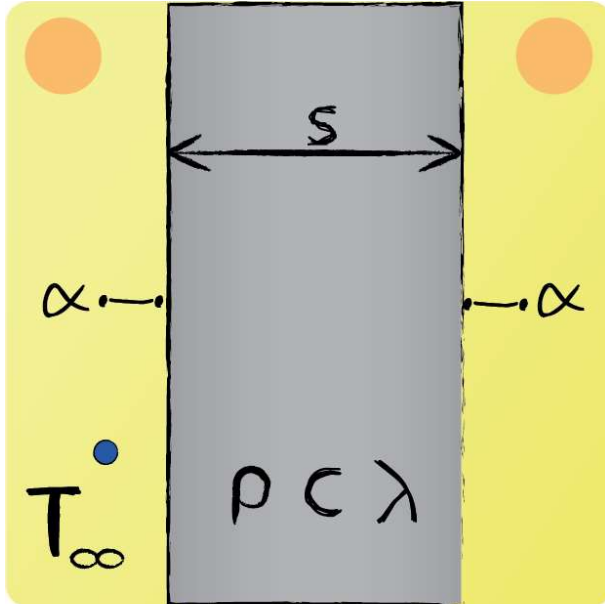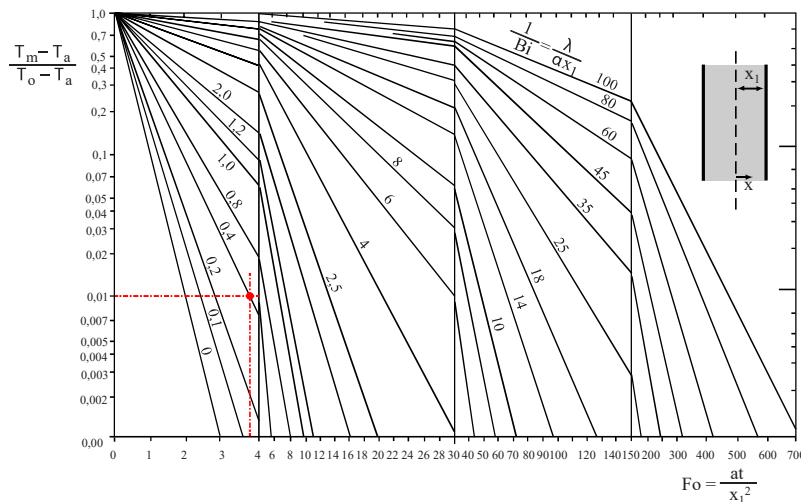# Exam Preparation - Conduction 26

A plate with thickness $x = 2$ cm with initial homogeneous temperature $T(x, t = 0) = 293$ K, is suddenly exposed to a medium of temperature $T_A = 353$ K. Determine the time t_1 at which $T(x = 0, t_1) = 352.4$ K is reached.

Problem type:
One-dimensional, unsteady-state heat conduction that does penetrate.

$$\frac{1}{\text{Bi}} = \frac{\lambda}{\alpha \cdot x_1} = 0.4$$

$$\frac{T_m - T_a}{T_o - T_a} = 0.01$$

$$\rightarrow \text{Fo} = 3.77$$

$$t = 3283.95 \text{ s}$$