Lecture 16 - Question 4
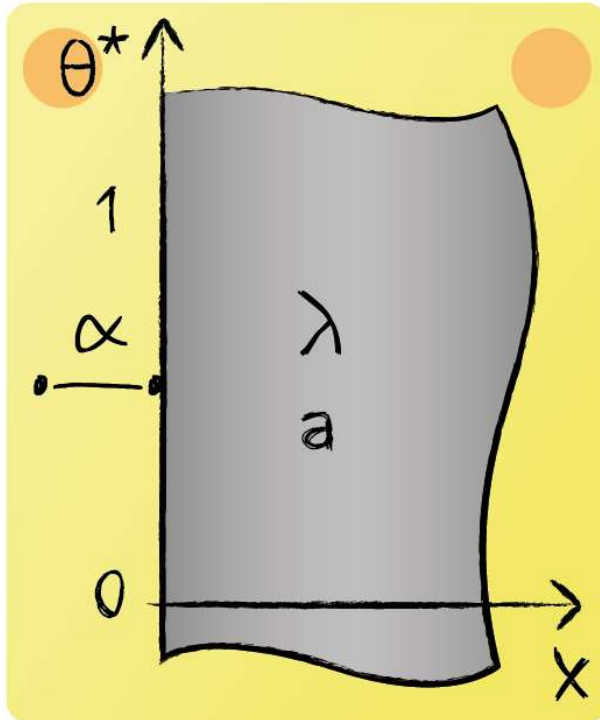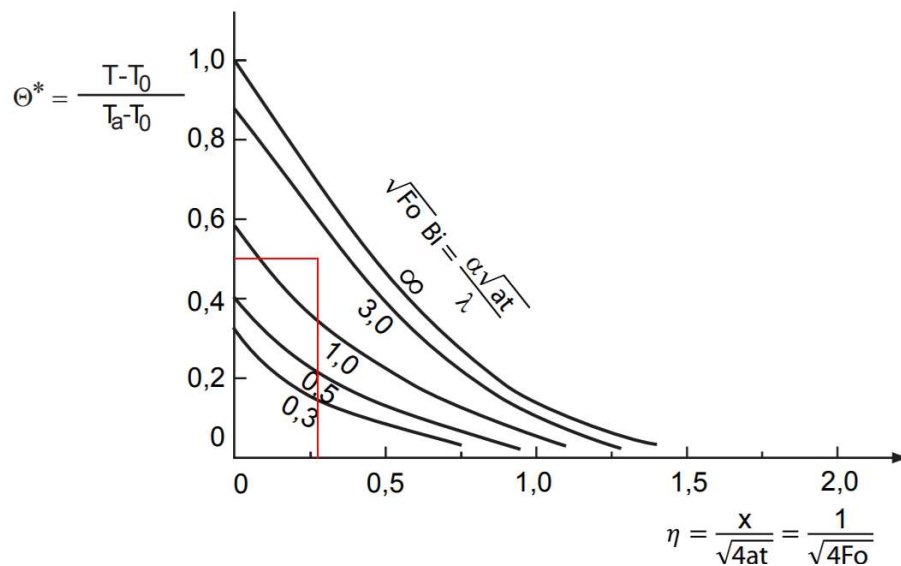

Determine for a plate for which position x is $\theta^*(\eta) = 0.5$ reached after t=10 s? Take $\alpha = 3000$ W/m²K, $\lambda = 40$ W/mK and a $= 100 \cdot 10^{-6}$ m²/s. Use Figure 5.6 from the Lecture Notes.

$$\sqrt{Fo} \cdot Bi = \frac{\alpha \sqrt{a \cdot t}}{\lambda} = 2.3717 \rightarrow \eta = 0.275$$

$$x = 2\eta \sqrt{at} = 0.0174 \; m$$