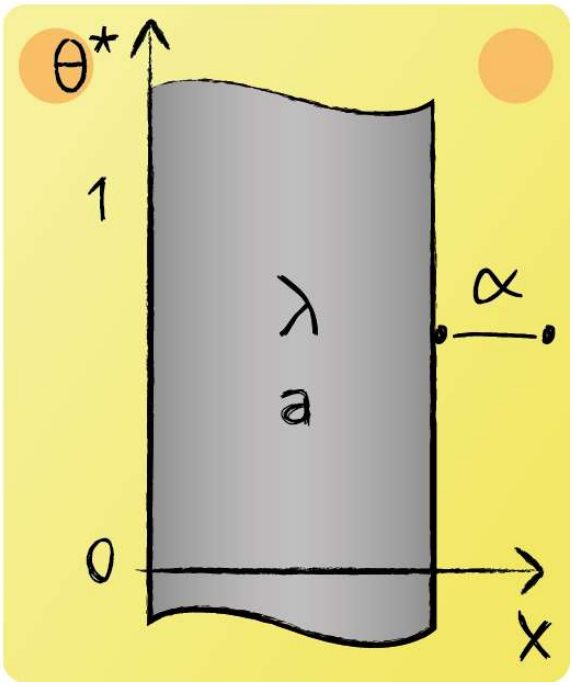
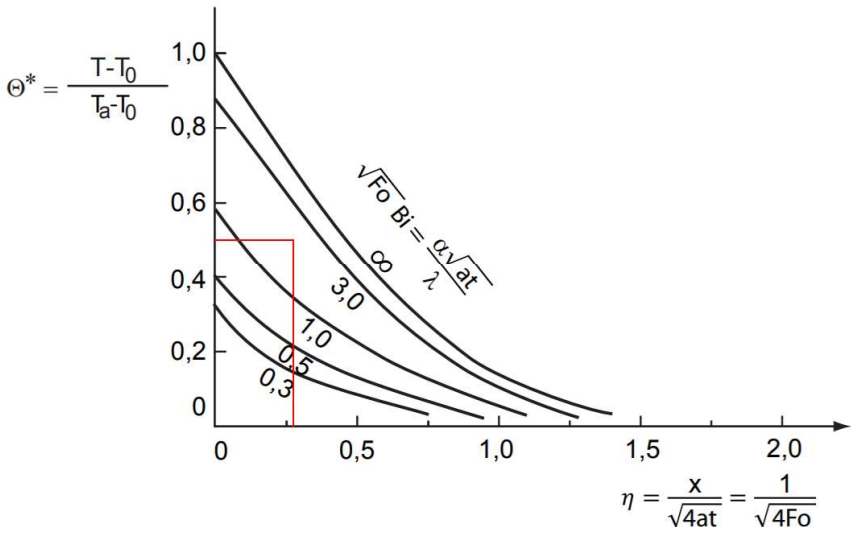
Lecture 16 - Question 4



Determine for a plate for which position x is $\theta^*(\eta) = 0.5$ reached after t=10 s? Take α = 3000 W/m^{2}K, λ = 40 W/mK and a = 100·10^{-6} m^2/s. Use Figure 5.6 from the Lecture Notes.



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

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