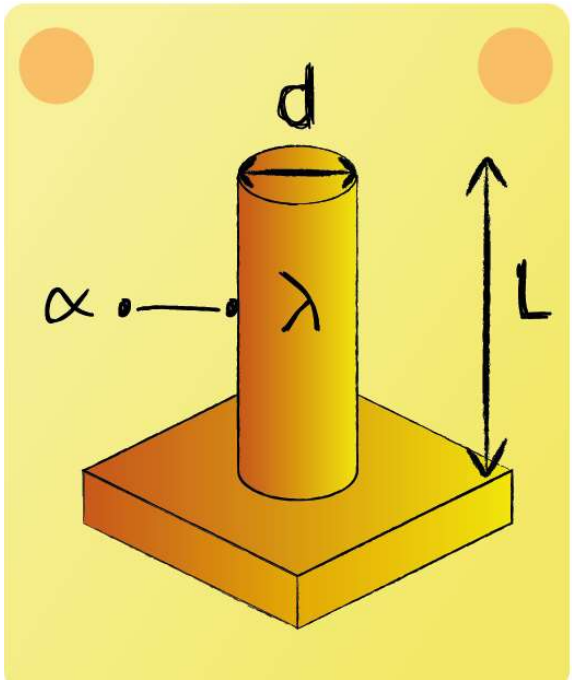
Lecture 12 - Question 3



Determine the fin efficiency. Take d = 10 mm, $\lambda = 240$ W/mK, $\alpha = 5$ W/m^{2}K and L = 50 mm.

$$A_c = \frac{1}{4}\pi d^2 = 7.854 \cdot 10^{-5}\ m^2$$

$$U = \pi d = 0.0314\ m$$

$$m = \left(\frac{\alpha U}{\lambda A_c}\right)^{1/2} = 2.8868\ m^{-1}$$

$$\eta_R = \frac{tanh(mL)}{mL} = 0.9931$$