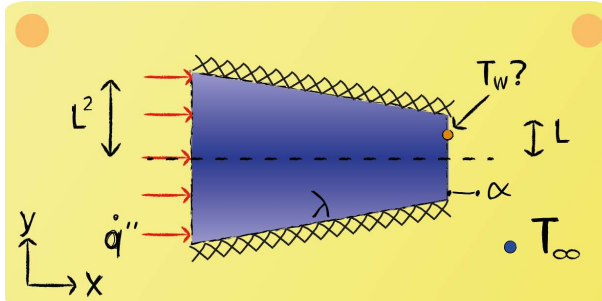


## Lecture 6 - Question 8



Set up the energy balance for the truncated cone to determine its temperature  $T_w$ . Assume steady-state heat transfer without source/sink inside.

**Energy balance:**

$$\dot{Q}_{x,in} - \dot{Q}_{x,out} = 0$$

The sum of the in- and outgoing heat fluxes of the control volume should equal zero, because of steady-state conditions.



**Heat fluxes:**

$$\dot{Q}_{in} = \dot{q}'' \pi L^4$$

$$\dot{Q}_{out} = \alpha \pi L^2 (T_w - T_{\infty})$$