$$\dot{Q} = \frac{T_{\infty_{in}} - T_{\infty_{out}}}{R_{tot}}$$

· le despreca radiación

$$R_{tot} = R_1 + R_2 + R_3 + R_4 + R_5$$

* Suposición → si la resistencia dispara $q''_h \left[\frac{W}{m^2}\right]$ por tanto el flujo $\dot{Q}$

$$\dot{Q} = q''_h * \text{Volumen de lamina} \Rightarrow \dot{Q} = q''_h \cdot 2\pi(r_3 - r_2)\cdot L \rightarrow \text{Longitud tubería}$$

$$\frac{dT}{dr} = \frac{C_1^{III}}{r} \quad ; \quad T(r)^{III} = C_1^{II} \ln r + C_2^{II}$$

BC1 → $r = r_2$

$$\dot{Q}^{II} = Q^{III} \rightarrow -K_s A_s \frac{dT}{dx}^{II} = -K A_s \frac{dT}{dx}^{III}$$

$$Q^{II} = Q^{I} = Q^{III} = -K A_s \frac{dT}{dx}^{III}$$

$$q''_h \cdot 2\pi(r_3 - r_2)\cdot L = -K_s A_s \frac{C_1}{r}^{III} \Rightarrow q''_h L = -K \frac{C_1}{r_2}^{III}$$

BC2 → $r = r_2$

$$q''_h 2\pi(r_3 - r_2)\cdot L = \frac{T_{surf_{\infty_m}}^{I} - T_{surf_{in}}^{III}}{R_1 + R_{2i}} \Rightarrow Q = \frac{T_{surf_{\infty_{in}}}^{I} - C_1^{III} \ln C_2 + C_2}{\frac{1}{h_i 2\pi r_1} + \frac{\ln(r_2/r_1)}{2\pi(r_2 - r_1)K_{cu}}}$$