Parte II. Como Aletas

$$\theta = C_3 e^{mz} + C_4 e^{-mz} \qquad \theta = T(z) - T_\infty$$

$$T^{II}(z) = T_\infty + C_3 e^{mz} + C_4 e^{-mz} \qquad m = \sqrt{\frac{h_o}{K A_c}}$$

$$m = \sqrt{\frac{4h \cdot L}{KD}} \qquad p = \pi D k$$

$$A_c = \frac{\pi}{4} D^2$$

$$\frac{dT^{II}}{dz} = m C_3 e^{mz} + m C_4 e^{-mz}$$

B.C 1 → o T∞ = se cambia por el ye

$z = -L/2$

$$-K A_s \frac{dT^{I}}{dz} = h A_s (T_\infty - T^{I}(-L/2))$$

B.C 2

$z = 0$

$$T^{I} = T^{II}$$

B.C 3

$z = 0$

$$-K \frac{dT^{I}}{dz} = -K \frac{dT^{II}}{dz} \Rightarrow \frac{dT^{I}}{dz} = \frac{dT^{II}}{dz}$$

B.C 4

$z = L/2$

$$-K \frac{dT^{II}}{dz} = h(T^{II}(L/2) - T_\infty)$$

$$A \times C = b$$

$$C = A^{-1} \times b$$

$$-k\left(C_1 - \frac{e_{gen} z}{k}\right) - h\left(T_\infty - T^I(-1/2)\right)$$

$$-kC_1 + e_{gen}(-1/2) - hT_\infty - h\left(-\frac{e_{gen}(-1/2)^2}{2k} + C_1(-1/2) + C_2\right)$$

$$-kC_1 + hC_1(-1/2) - hC_2 = \} ①$$

$$C_1(-k + h(-1/2)) - hC_2$$

$$\Rightarrow hT_\infty + \frac{he_{gen}(-1/2)^2}{2k} - e_{gen}(-1/2)$$

$$-\frac{e_{gen} z^2}{2k} + C_1 z + C_2 = T_\infty + C_3 e^{mz} + C_4 e^{-mz}$$

$z=0 \Rightarrow$

$$0 + 0 + C_2 = T_\infty + C_3 + C_4$$

$$C_2 - C_3 - C_4 = T_\infty \} ②$$

$$\left(C_1 - \frac{e_{gen} z}{k}\right) = mC_3 e^{mz} - mC_4 e^{-mz}$$

$z=0$

$$C_1 - mC_3 + mC_4 = 0 \} ③$$

$$-k\left(mC_3 e^{mz} + mC_4 e^{-mz}\right) = h\left(T^I(1/2) - T_\infty\right)$$

$$-k\left(mC_3 e^{mz} + mC_4 e^{-mz}\right) = \frac{h\left(T^{II}(1/2) - T_\infty\right)}{k} \} ④$$

$$-kmC_3 e^{mz} - kmC_4 e^{-mz} = h\left(T_\infty + C_3 e^{mz} + C_4 e^{-mz} - T_\infty\right)$$

$$-kmC_3 e^{mz} - hC_3 e^{mz} - kmC_4 e^{-mz} - hC_4 e^{-mz}$$

$$C_3\left(-kme^{mz} - he^{mz}\right) - C_4\left(kme^{-mz} + he^{-mz}\right) = 0$$