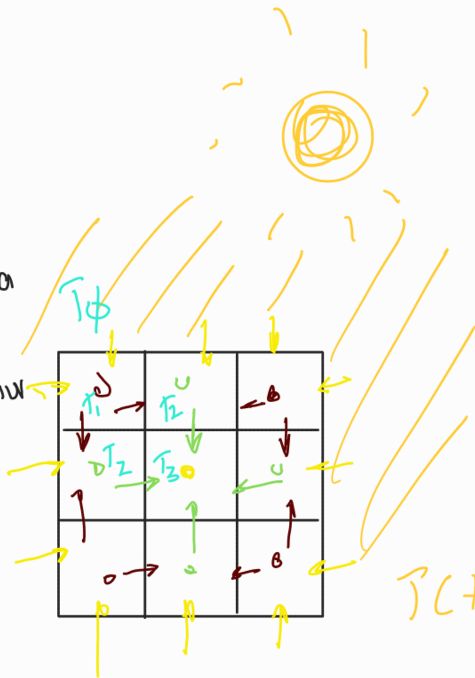
R_i = Pared interna

R_o = Pared exterior



$$T_0 > T_1 > T_2 > T_3$$

$$T(t) = T_{env} + (T(0) - T_{env})e^{-rt}$$

$$\frac{dT}{dt} = k[M(t) - T(t)]$$

outside inside

Cuarto

$$q_{out} = \frac{2(T_1 - T_2)}{R_i} + q$$

$$q_{in} = \frac{2}{R_o}(T_o - T_1)$$

$$\dot{T}_1 = \frac{1}{C}(H_i - H_o)$$

$$\dot{T}_1 = \frac{1}{C}\left(\frac{2}{R_o}(T_o - T_1) - \left(\frac{2}{R_1}(T_1 - T_2) + q\right)\right)$$

$$\frac{dT_1}{dt} = \frac{2}{CR_o}(T_o - T_1) - \frac{2}{CR_i}(T_1 - T_2) - \frac{q}{C}$$

$$\frac{2}{CR_o}T_o - \frac{2}{CR_o}T_1 - \frac{2}{CR_i}T_1 + \frac{2}{CR_i}T_2 - \frac{q}{C}$$

$$\boxed{\frac{dT_1}{dt} = \frac{1}{C}\left(\frac{2}{R_o}(T_o - T_1) - \left(\frac{2}{R_i}(T_1 - T_2) + q\right)\right)}$$

$$\dot{T}_1 = \frac{1}{C}\left(\frac{2}{R_o}(T_o - T_1) - \frac{2}{R_i}(T_1 - T_2) - q\right)$$

$$\frac{dT_1 C}{dt} = \frac{2}{R_o}(T_o - T_1) - \frac{2}{R_1}(T_1 - T_2) - q$$

$$\frac{dT_1 C}{dt} = \frac{2}{R_o}T_o - \frac{2}{R_o}T_1 - \frac{2}{R_i}T_1 + \frac{2T_2}{R_i} - q$$

$$sT_1(s) - T_1(0) = \frac{\frac{2T_o}{R_o}}{\frac{s}{1}} - \frac{2}{R_o}T_1(s) - \frac{2}{R_1}T_1(s) + \frac{\frac{2T_2}{R_i}}{\frac{s}{1}} - \frac{q}{s}$$

$$ST_1(S) - T_1(0) = \frac{2T_0}{R_0 S} - 2T_1(S)\left(\frac{1}{R_0} + \frac{1}{R_1}\right) + \frac{2T_2}{R_i S} - \frac{q}{S}$$

$$ST_1(S) - T_1(0) + 2T_1(S)\left(\frac{1}{R_0} + \frac{1}{R_1}\right) = \frac{2T_0}{R_0 S} + \frac{2T_2}{R_i S} - \frac{q}{S}$$

$$T_1(S)\left(S + 2\left(1/R_0 + 1/R_i\right)\right) - T_1(0) = \frac{2T_0}{R_0 S} + \frac{2T_2}{R_i S} - \frac{q}{S}$$

$$T_1(S) = \frac{\frac{2T_0}{R_0 S} + \frac{2T_2}{R_i S} - \frac{q}{S} + T_1(0)}{S + 2\left(1/R_0 + 1/R_i\right)}$$

$$\frac{\frac{2T_0 \cdot R_i + 2T_2 \cdot R_0 - q R_0 \cdot R_i + T_1(0) R_0 R_i S}{R_0 R_i \cdot S}}{\frac{R_0 R_i S + 2R_i + 2R_0}{R_0 \cdot R_i}}$$

$$T_1(S) = \frac{2T_0 \cdot R_i + 2T_2 \cdot R_0 - q R_0 \cdot R_i + T_1(0) R_0 R_i \cdot S}{S(R_0 R_i S + 2R_i + 2R_0)}$$

Cuerto

$$q_{out} = \frac{1}{R_i}(T_2 - T_3) + q$$

$$q_{in} = \frac{1}{R_0}(T_0 - T_2) + \frac{2}{R_1}(T_1 - T_2)$$

$$\dot{T}_2 = \frac{1}{C}\left[\frac{1}{R_0}(T_0 - T_2) + \frac{2}{R_1}(T_1 - T_2) - \left(\frac{1}{R_i}(T_2 - T_3) + q\right)\right]$$

Cuerto

$$q_{out} = q$$

$$q_{in} = \frac{4}{R_1}(T_2 - T_3)$$

$$\dot{T}_3 = \frac{1}{C}\left[\frac{4}{R_1}(T_2 - T_3) - q\right]$$