

(4) Ges. $T(x,t) \in C^{2,1}(Q) \cap C(\bar{Q})$:

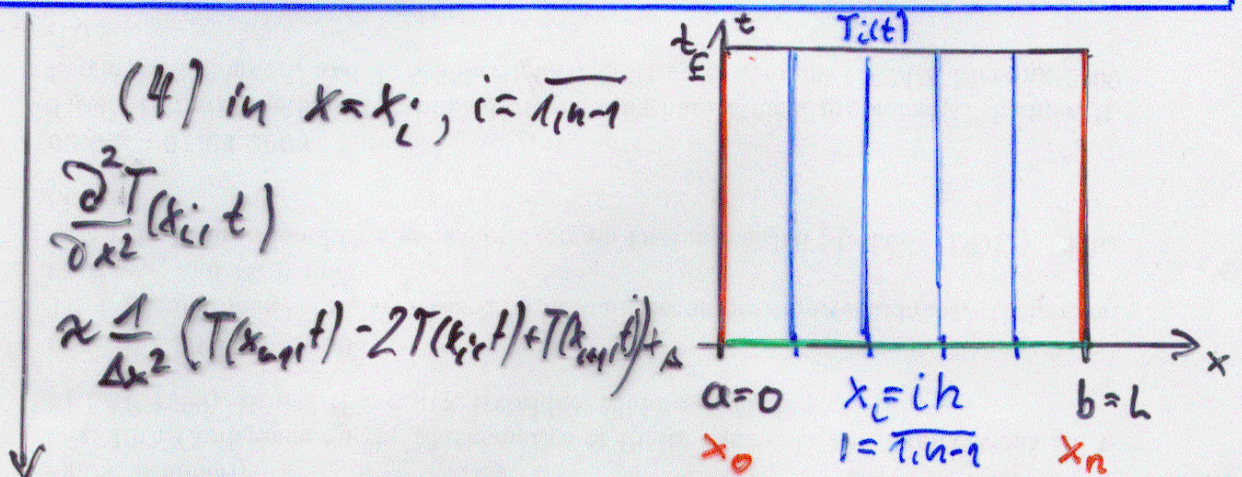
$$\frac{\partial T}{\partial t}(x,t) - \kappa \frac{\partial^2 T}{\partial x^2}(x,t) = 0 \quad \forall (x,t) \in Q := (0,L) \times (0,t_E),$$

RB: $T(0,t) = T_a(t), T(L,t) = T_b(t) \quad \forall t \in (0,t_E]$

AB: $T(x,0) = T_A(x) \quad \forall x \in [0,L]$

$\kappa := \lambda / \rho c$ - Temperaturleitzahl

ARWA



(5) Ges. $T_i(t), i = \overline{1, n-1}, t \in (0, t_E)$

$$\frac{dT_i(t)}{dt} = \kappa \frac{T_{i-1}(t) - 2T_i(t) + T_{i+1}(t)}{\Delta x^2}$$

$T_0(t) = T_a(t), T_n(t) = T_b(t), t \in (0, t_E)$

$T_i(0) = T_A(x_i), i = \overline{0, n}$

Ges. $\underline{T}(t) = (T_1(t), \dots, T_{n-1}(t))^T$

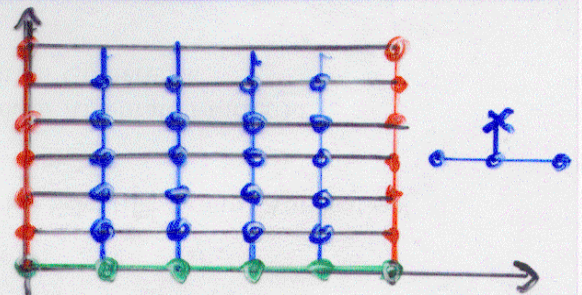
$$\frac{d\underline{T}(t)}{dt} = -K \underline{T}(t) + \underline{b}(t)$$

$t \in (0, t_E)$

$\underline{T}(0) = \underline{T}_A$ AWA

(5) in $t = t_j, j = \overline{0, m-1}$

$$\frac{dT_i(t)}{dt} \approx \frac{T_i(t_{j+1}) - T_i(t_j)}{\Delta t}$$



(6) $\frac{T_i^{j+1} - T_i^j}{\Delta t} = \kappa \frac{T_{i-1}^j - 2T_i^j + T_{i+1}^j}{\Delta x^2}, i = \overline{1, n-1}, j = \overline{0, m-1}$

RB: $T_0^j = T_a(t_j), T_n^j = T_b(t_j), j = \overline{0, m}$

AB: $T_i^0 = T_A(x_i), i = \overline{0, n}$

Euler rückwärts