

$$\frac{\partial f(x)}{\partial x} \approx \frac{1}{\Delta x} (f(x+\Delta x) - f(x)) \quad \Delta x \text{ klein} \quad (\text{beim } i: N=5)$$

$$\approx \frac{1}{\Delta x} (f(x) - f(x-\Delta x))$$

$$\frac{\partial^2 f}{\partial x^2} = \frac{1}{(\Delta x)^2} (f(x+\Delta x) - 2f(x) + f(x-\Delta x))$$

$$\frac{\partial^2 T}{\partial x^2} \xrightarrow{(i)} \frac{1}{(\Delta x)^2} (T_{i+1} - 2T_i + T_{i-1})$$

$$\dot{T}_i = \frac{\alpha}{\Delta x^2} (T_{i+1} - 2T_i + T_{i-1}) \quad i=1, \dots, N-1$$

$$T_0 = T_l, \quad T_N = T_r$$

$$\dot{T}_1 = \frac{\alpha}{\Delta x^2} (T_2 - 2T_1 + T_0)$$

$$\dot{T}_2 = \frac{\alpha}{\Delta x^2} (T_3 - 2T_2 + T_1)$$

$$\vdots$$