

Shape Factor

$$q = SK \Delta T$$

$S$  shape factor

$$R_{\text{cond}} = \frac{1}{SK}$$

Table 4.1

## Dimensionless Heat Rate

$A_s$  active area

$L_c$  characteristic length

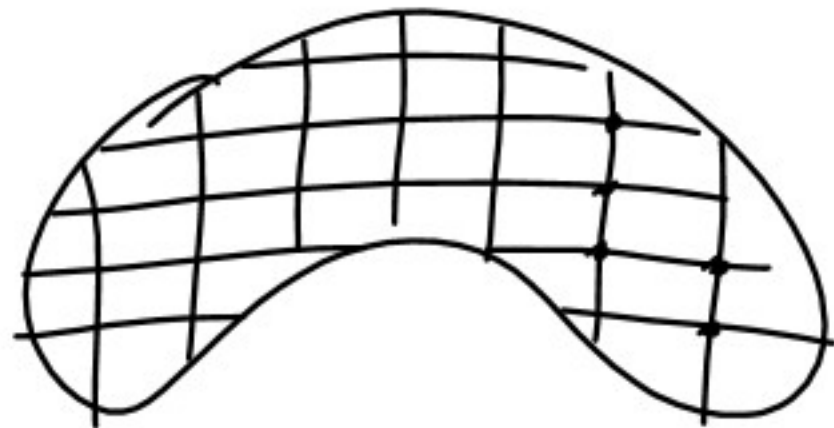
$q_{ss}^*$  dimensionless conduction heat rate

$$L_c = \sqrt{\frac{A_s}{\pi}}$$

$$q_{ss}^* = \frac{qL_c}{KA_s(T_1 - T_2)}$$

Table 4.1

# Finite Difference



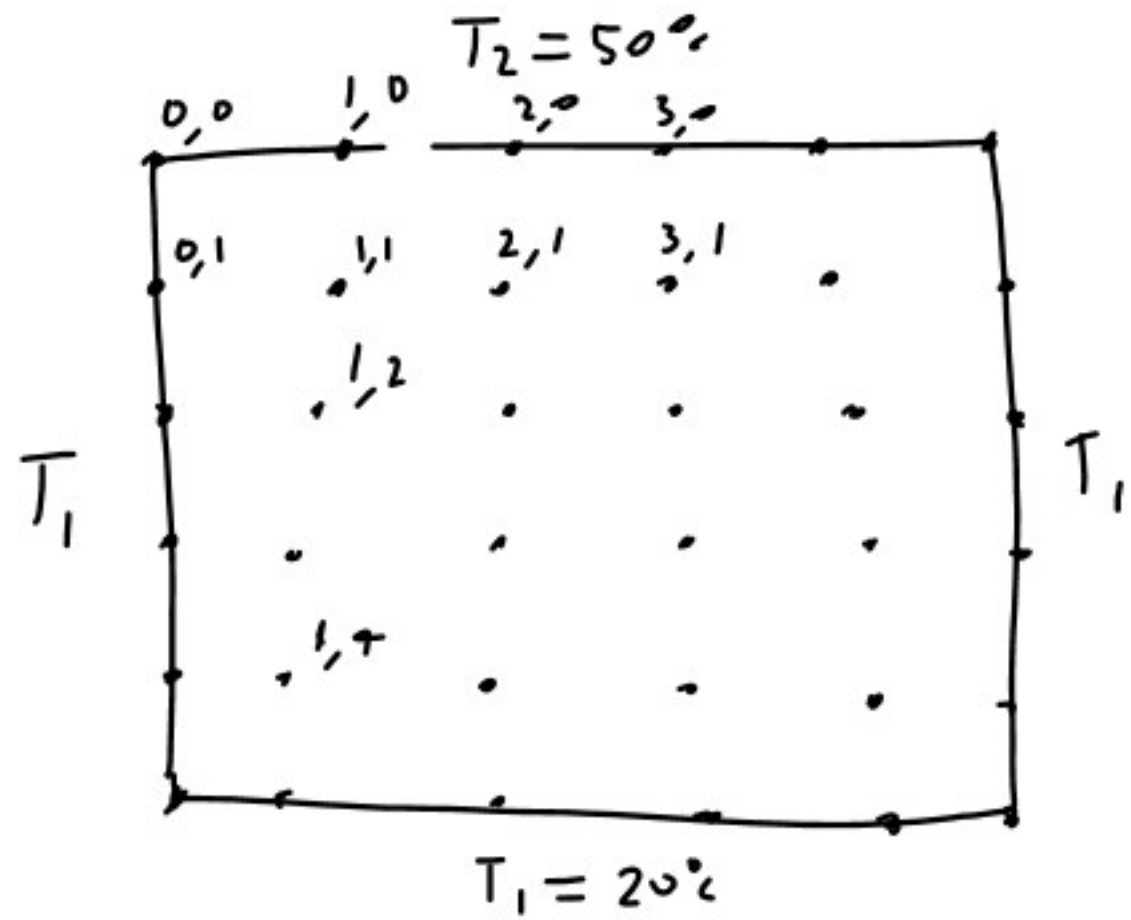
$$\frac{\partial^2 T}{\partial x^2} + \frac{\partial^2 T}{\partial y^2} + \frac{\dot{q}}{k} = 0$$

$$\left. \frac{\partial^2 T}{\partial x^2} \right|_{m,n} \approx \frac{T_{m+1,n} + T_{m-1,n} - 2T_{m,n}}{\Delta x^2}$$

$$\frac{T_{m+1,n} + T_{m-1,n} - 2T_{m,n}}{\Delta x^2} + \frac{T_{m,n+1} + T_{m,n-1} - 2T_{m,n}}{\Delta y^2} + \frac{\dot{q}}{k} = 0$$

$$T_{m+1,n} + T_{m-1,n} + T_{m,n+1} + T_{m,n-1} + \frac{\dot{q}\Delta x^2}{k} - 4T_{m,n} = 0$$

Table 9.2



$$[A][T] = [c]$$

