

Let's say  $\frac{dT}{dt} = 0$  at top (is Normal)

$\vec{v}$   
 $T_e, T_c$

Let Equilibrium  $T_e - T_c = T_e + \lambda \frac{dT}{dz}$

$$T_e - T_c = T_e + \lambda \frac{dT}{dz}$$

$$T_e - T_c = T_e + \lambda \frac{dT}{dz}$$

$$T_e - T_c = T_e + \lambda \frac{dT}{dz}$$

$$\begin{bmatrix} 1 & -2 & 1 & 0 & 0 & 0 \\ 0 & 1 & -2 & 1 & 0 & 0 \\ 0 & 0 & 1 & -2 & 1 & 0 \\ 0 & 0 & 0 & 1 & -1 & 0 \end{bmatrix} \begin{bmatrix} T_e \\ T_c \\ T_e \\ T_c \\ T_e \\ T_c \end{bmatrix} = \begin{bmatrix} 0 \\ \lambda \frac{dT}{dz} \\ \lambda \frac{dT}{dz} \\ \lambda \frac{dT}{dz} \\ \lambda \frac{dT}{dz} \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} T_e \\ T_c \\ T_e \\ T_c \\ T_e \\ T_c \end{bmatrix} = \begin{bmatrix} 0 \\ \lambda \frac{dT}{dz} \\ \lambda \frac{dT}{dz} \\ \lambda \frac{dT}{dz} \\ \lambda \frac{dT}{dz} \\ 0 \end{bmatrix}$$

$$\frac{dT}{dz} = \lambda \frac{dT}{dz} + \epsilon$$

$$\frac{T_e - T_c}{dz} = \lambda \frac{dT}{dz} + \epsilon$$

$$T_e = T_c + \epsilon + \lambda \frac{dT}{dz} (T_e - T_c) + \epsilon$$

$$\left( 1 - \lambda \frac{dT}{dz} \right)$$

$$T_e (1 + \epsilon) = \lambda \frac{dT}{dz} + T_c + \epsilon$$

$$\begin{aligned} a &= -k \\ b &= 1 + 2k \\ c &= -k \\ d &= T_{n+1} + \epsilon \end{aligned}$$

$$B(t) \Rightarrow \text{Bottom} \Rightarrow b=1, a=c=0, d=V_{\text{bottom}}$$

$$T(t) \Rightarrow c=0, T_n = T_{n+1}$$

$$\begin{aligned} a_k &= -1 \\ b_k &= +1 \end{aligned}$$

$$\text{want } x_n = x_{n-1}$$

$$x_n - x_{n-1} = b_n - x_n + d_n$$

$$x_n = 1, b_n = 1, d_n = 0$$

$$-x_{n+1} + x_n = 0$$

$$x_n = x_{n+1}$$