

[1]

$$x(t) = \begin{bmatrix} x_1(t) \\ x_2(t) \\ \vdots \\ x_n(t) \end{bmatrix}$$

$$m \ddot{x}_n = -k(x_n - x_{n-1}) - k(x_n - x_{n+1})$$

$$= kx_{n-1} - 2kx_n + kx_{n+1}$$

[1,1]

$$m \ddot{x}_1 = -kx_1 - k(x_1 - x_2)$$

$$m \ddot{x}_N = -k(x_N - x_{N-1}) - kx_N = -2kx_N + kx_{N-1}$$

$$K = \begin{bmatrix} -2k & k & 0 & 0 & \dots & 0 \\ k & -2k & k & 0 & \dots & 0 \\ 0 & k & -2k & k & 0 & \dots \\ & & & \ddots & & k \\ & & & & k & -2k \end{bmatrix}$$

$$K = \begin{bmatrix} -2k & k & & & \\ k & -2k & & & \\ & k & -2k & & \\ & & k & -2k & \\ & & & \ddots & \\ & & & & k & -2k \end{bmatrix}$$

$$\sin(2\theta + \theta) = \sin(2\theta)\cos(\theta) + \cos(2\theta)\sin(\theta)$$

[1,2]

$$u_l = N e \begin{bmatrix} \sin(q_l \cdot 1) \\ \sin(q_l \cdot 2) \\ \vdots \\ \sin(q_l \cdot N) \end{bmatrix}$$

$$2\sin(q_l) \cos(q_l)$$

$$K u_l = N e \cdot \begin{bmatrix} -2k \sin(q_l \cdot 1) + k \sin(q_l \cdot 2) \\ k \sin(q_l \cdot 1) - 2k \sin(q_l \cdot 2) + k \sin(q_l \cdot 3) \\ \vdots \\ k \sin(q_l \cdot (N-1)) - 2k \sin(q_l \cdot N) \end{bmatrix}$$

$$\sqrt{1} \cdot 4, B3, B4 \times 2$$

$$\sqrt{1} \cdot 4, 5, B1, B2 \times 4$$

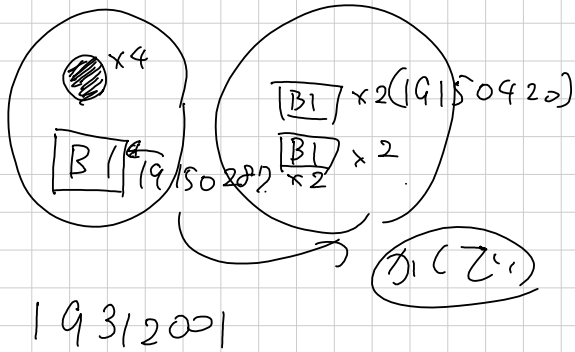
$$\sqrt{1} \cdot 5, SP or 4.$$

~~7~~ 火 水 木 金

□: on-site

△: on-line

1  
2  
3  
4  
5  
6



$$a_1x + b_1 = a_2x + b_2$$

$$(a_1 - a_2)x = b_2 - b_1$$

$$x = - \frac{b_1 - b_2}{a_1 - a_2}$$