

$$y = x(t) + l + u_s + u(t)$$

$$\dot{y} = \dot{x} + \dot{u}$$

$$T = -m\ddot{y} = -m(\ddot{x} + \ddot{u})$$

$$F = -K(u_s + u) - c\dot{u} + mg$$

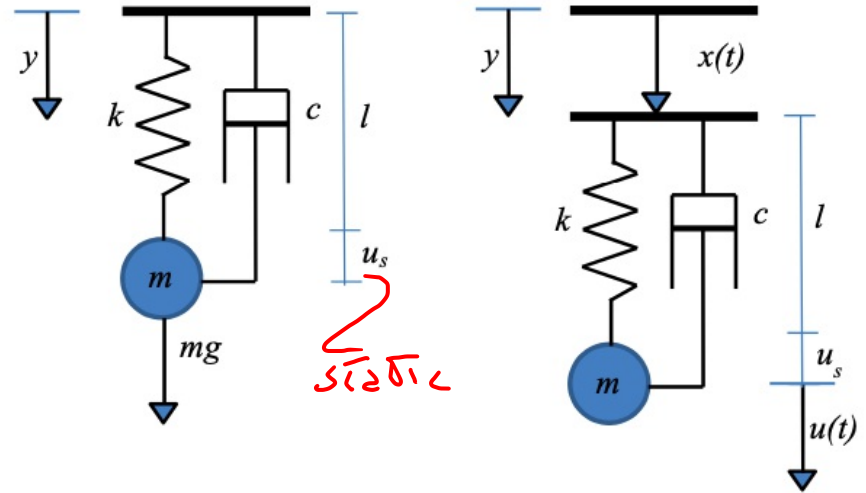
$$F = -Ku - c\dot{u}$$

$$F + T = 0 = -Ku - c\dot{u} - m\ddot{x} - m\ddot{u} = 0$$

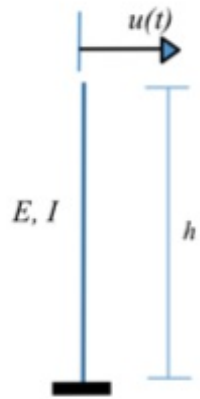
$$\underline{m\ddot{u} + c\dot{u} + Ku = -m\ddot{x}} \quad (2)$$

Example 1:

Formulate the equation of motion for the structural system presented in Figure 1.13.

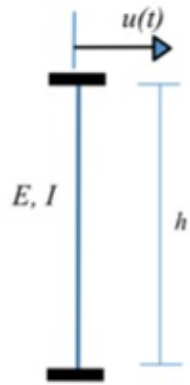


$$|Ku_s| = |mg| \quad (1)$$

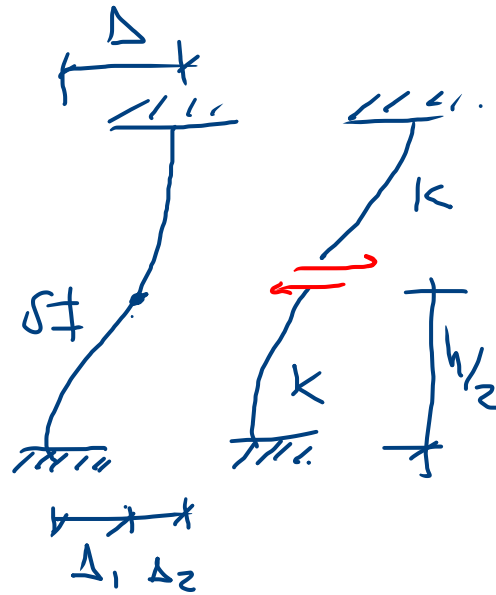
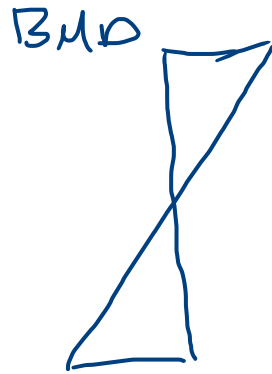


$$K = \frac{3EI}{h^3}$$

A hand-drawn coordinate system consisting of a vertical line and a horizontal line intersecting at the origin. The vertical line has a double slash at its bottom end, and the horizontal line has a double slash at its right end.



K_e

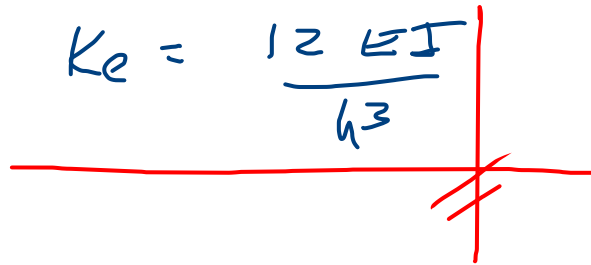


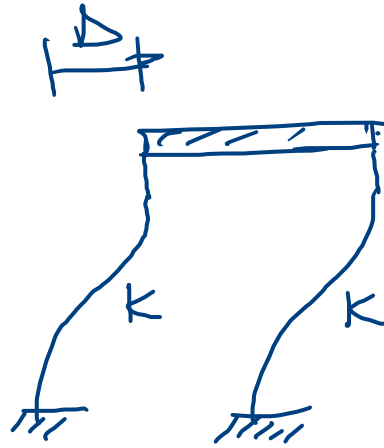
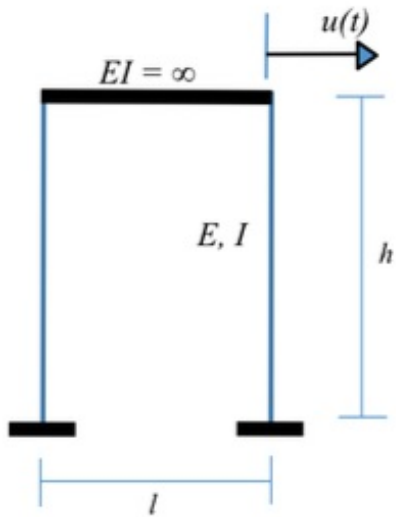
$$K = \frac{3EI}{(h/2)^3}$$

Series

$$K_e = \left(\frac{K + K}{K K} \right)^{-1}$$

$$K_e = \frac{12EI}{h^3}$$





P.

$$K = \frac{12EI}{h^3}$$

$$\begin{aligned} k_e &= K + K \\ &= \frac{24EI}{h^3} \end{aligned}$$