

$$m_1 \ddot{x}_1 + k_1 x_1 + a(x_1 - x_2)^3 + b(x_1 - x_2) - c_2(\dot{x}_1 - \dot{x}_2) - c_1 \dot{x}_1 = 0$$

$$m_2 \ddot{x}_2 + a(x_2 - x_1)^3 + b(x_2 - x_1) + k_3(x_2 - x_3) + c_2(\dot{x}_2 - \dot{x}_1) + c_3(\dot{x}_2 - \dot{x}_3) = f \cos(\omega t)$$

$$m_3 \ddot{x}_3 + k_3(x_3 - x_2) + c_3(\dot{x}_3 - \dot{x}_2) + c_4(\dot{x}_3)^2 = 0$$

$$I.C = 0$$

$$m_1 = m_2 = m_3 = 1 \text{ kg}$$

$$k_1 = 2 \frac{N}{m}, k_3 = 3 \frac{N}{m}, a = -1000 \frac{N}{m^3}, b = 1 \frac{N}{m}$$

$$c_1 = 0.2 \frac{N.s}{m}, c_2 = 0.3 \frac{N.s}{m}, c_3 = 0.1 \frac{N.s}{m}, c_4 = 0.3 \frac{N.s^2}{m^2}$$

$$f = \begin{cases} 0 \text{ N} \\ 1 \text{ N} \\ 10 \text{ N} \\ 100 \text{ N} \end{cases}, \omega = 1.5 \frac{\text{Rad.}}{\text{s}}$$