



so for M_1

$$0 = M_1 \frac{d^2 y_1}{dt^2} + B \frac{d}{dt}(y_1 - y_2) - K_1(y_1 - y_2)$$

$$M_1 \ddot{y}_1 = -B(\dot{y}_1 - \dot{y}_2) - K_1(y_1 - y_2)$$

$$\ddot{y}_1 = \frac{1}{M_1} [B(\dot{y}_2 - \dot{y}_1) + K_1(y_2 - y_1)]$$

for M_2

$$\ddot{f}(t) = M_2 \ddot{y}_2 + K_2 y_2 + B(\dot{y}_2 - \dot{y}_1) + K_1(y_2 - y_1)$$

$$M_2 \ddot{y}_2 = F(t) - K_2 y_2 + K_1(y_1 - y_2) + B(\dot{y}_1 - \dot{y}_2)$$

$$\ddot{y}_2 = \frac{1}{M_2} [F(t) - K_2 y_2 + K_1(y_1 - y_2) + B(\dot{y}_1 - \dot{y}_2)]$$