



free body for M_1

$\begin{matrix} \rightarrow f_{m1} \\ \rightarrow +K_1 \\ \rightarrow +B \end{matrix}$

free body for

$\begin{matrix} \rightarrow f_{m2} \\ \rightarrow f_{K2} \\ \rightarrow f_B \\ \rightarrow f_{K1} \end{matrix}$

do for M_1

$$0 = M_1 \frac{d^2 y_1}{dt^2} + B \frac{d}{dt} (\dot{y}_1 - \dot{y}_2) - K_1 (y_1 - y_2)$$

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

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

for M_2

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

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

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