The equations of motion for the system are as follows:

$$\begin{aligned} m_1\ddot{y_1} &= -k_1 y + k_2(y_2 - y_1) + m_1 g \\ m_2\ddot{y_2} &= -k_2(y_2 - y_1) + k_2(y_3 - y_2) \\ m_3\ddot{y_3} &= -k_3(y_3 - y_2) \end{aligned}$$

These can be written in matrix form as

$$\begin{bmatrix} -k_1 - k_2 & k_2 & 0 \\ k_2 & -k_2 - k_3 & k_3 \\ 0 & k_2 & -k_3 \end{bmatrix} \begin{bmatrix} y_1 \\ y_2 \\ y_3 \end{bmatrix} = \begin{bmatrix} m_1 & 0 & 0 \\ 0 & m_2 & 0 \\ 0 & 0 & m_3 \end{bmatrix} \begin{bmatrix} \ddot{y_1} - g \\ \ddot{y_2} - g \\ \ddot{y_3} - g \end{bmatrix}$$