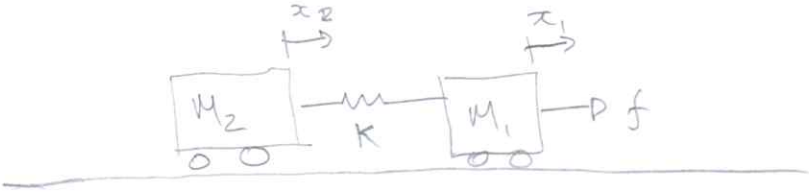
2 b)



$$\begin{cases} X_2 = X_{2(s)} \\ X_1 = X_{1(s)} \\ F = F_{(s)} \end{cases}$$

$$\boxed{FR = m\,a}$$

$$\begin{matrix} x_2: \\ x_1: \end{matrix}\begin{cases} M_2 \ddot{x}_2 = -K\,(x_2 - x_1) \\ M_1 \ddot{x}_1 = f - K\,(x_1 - x_2) \end{cases} \qquad \begin{cases} s^2 M_2 X_{2(s)} = -K X_2 + K X_1 \\ s^2 M_1 X_1 = F - K X_1 + K X_2 \end{cases}$$

$$\frac{X_2}{F_s} = ?$$

$$\begin{cases} \phi = (s^2 M_2 + K)\,X_2 - K\,X_1 \\ F = (s^2 M_1 + K)\,X_1 - K\,X_2 \end{cases}$$

$$\begin{pmatrix} F \\ \phi \end{pmatrix} = \begin{bmatrix} s^2 M_1 + K & -K \\ -K & s^2 M_2 + K \end{bmatrix} \begin{bmatrix} X_1 \\ X_2 \end{bmatrix}$$

$$X_2 = \frac{\begin{matrix} s^2 M_1 + K & F \\ K & 0 \end{matrix}}{(s^2 M_1 + K)(s^2 M_2 + K) - K^2}$$

$$= \frac{-F\,K}{}$$

tesis homework

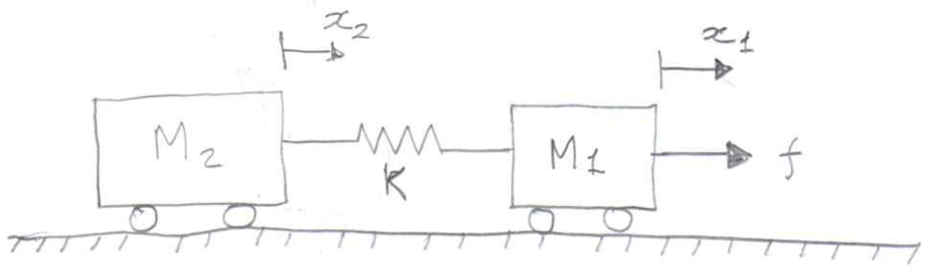
2 b)

$$\frac{K\,F_{(s)}}{M_1 s^2 + K} = X_{2(s)}\left(-\frac{K^2}{M_1 s^2 K} + K + M_2 s^2\right)$$

$$\frac{X_{2(s)}}{F_{(s)}} = \frac{K}{-K^2 + K M_1 s^2 + K^2 + M_1 M_2 s^4 + K M_2 s^2}$$

tesis PL

2 b)



$$\sum F_R = m_i \ddot{x}_{(t)}$$

M_1: $f(t) = M_1 \ddot{x}_1(t) + k(x_1(t) - x_2(t))$

M_2: $0 = M_2 \ddot{x}_2(t) + k(x_2(t) - x_1(t))$

transformada de Laplace

$$\begin{cases} F(s) = M_1 X_1(s) \cdot s^2 + K X_1(s) - K X_2(s) \\ 0 = M_2 X_2(s) \cdot s^2 + K X_2(s) - K X_1(s) \end{cases}$$

$$\begin{cases} F(s) = (M_1 s^2 + K) X_1(s) - K X_2(s) \\ K X_1(s) = (M_2 \cdot s^2 + K) \cdot X_2(s) \end{cases}$$

— — —

$$X_1(s) = \frac{((M_2 s^2 + K)}{K \; X_2(s)}$$

$$F(s) = \left(\frac{(M_1 s^2 + K)(M_2 s^2 + K)}{K}\right) X_2(s) - K X_2(s)$$

$$= \frac{(M_1 s^2 + K)(M_2 s^2 + K) - K^2}{K} \cdot X_2(s)$$

$$\frac{X_2(s)}{F(s)} = \frac{K}{(M_1 s^2 + K)(M_2 s^2 + K) - K^2}$$