

Tarea 1

Resolver los siguientes problemas utilizando Matriz Exponencial en Maple

Caso I:

$$M_1 = M_2$$

$$k_1 < k_2$$

Caso II

$$M_1 = M_2$$

$$k_1 > k_2$$

Caso III

$$M_1 > M_2$$

$$k_1 = k_2$$

$$M_1 \frac{d^2 x_1}{dt^2} = -k_1 x_1 + k_2 (x_2 - x_1)$$

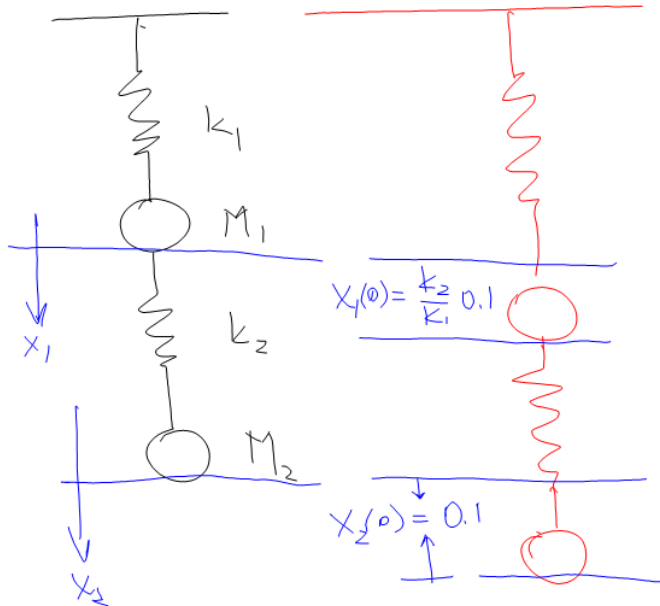
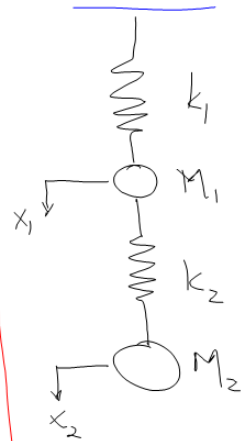
$$M_2 \frac{d^2 x_2}{dt^2} = -k_2 (x_2 - x_1)$$

$$\frac{dx_1}{dt} = x_3$$

$$\frac{dx_2}{dt} = x_4$$

$$\frac{dx_3}{dt} = \left(-\frac{k_1}{M_1} - \frac{k_2}{M_1}\right)x_1 + \frac{k_2}{M_1}x_2$$

$$\frac{dx_4}{dt} = \frac{k_2}{M_2}x_1 - \frac{k_2}{M_2}x_2$$



$$x_1(0) = \frac{k_2}{k_1}(0.1)$$

$$\frac{dx_1}{dt}(0) = 0$$

$$x_2(0) = 0.1 \text{ [m]}$$

$$\frac{dx_2}{dt}(0) = 0$$

