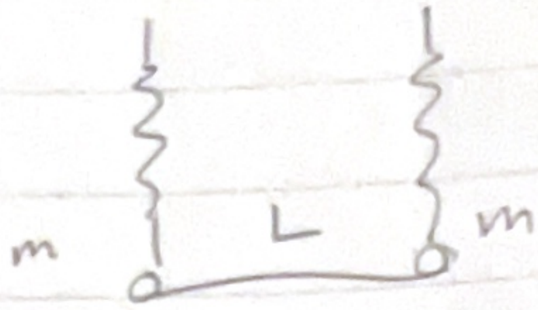
Addem 1



$$\mathcal{L} = \frac{1}{2}m(\dot{x}_1^2 + \dot{x}_2^2 + \dot{y}_1^2 + \dot{y}_2^2)$$

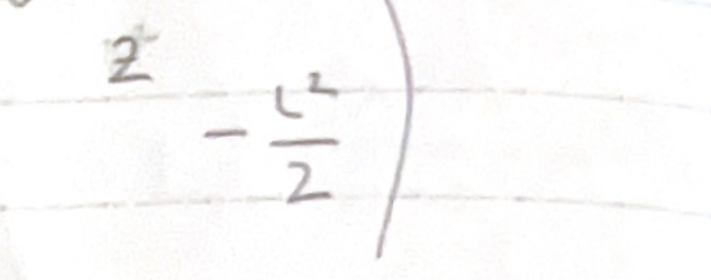
$$M = \begin{pmatrix} 2 & & \\ & 2 & \\ & & \frac{L^2}{2} \end{pmatrix} \qquad V = \begin{pmatrix} 0 & & \\ & 2 & \\ & & -\frac{L^2}{2} \end{pmatrix}$$

$$V - \lambda M = \begin{pmatrix} -2\lambda & & \\ & 2-2\lambda & \\ & & \frac{L^2}{2}(-1-\lambda) \end{pmatrix}$$

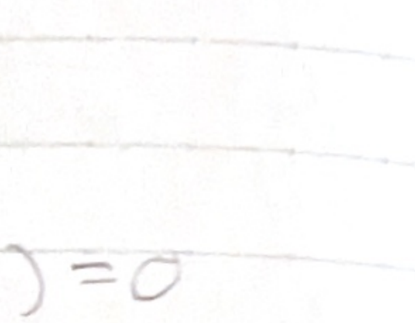
$$\det(V - \lambda M) = -2\lambda \cdot 2(1-\lambda) \cdot -(1+\lambda) = 0$$

$$\lambda = -1, 0, +1$$

$$\lambda = -1 \longrightarrow \begin{pmatrix} 0 \\ 0 \\ \frac{L^2}{2} \end{pmatrix}$$



$$\lambda = 0 \longrightarrow \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}$$



$$\lambda = 1 \longrightarrow \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix}$$