Forced Pendulum -> vertical excitation

$$\frac{1}{2}y = A\cos x + \sin \theta = 0$$

$$\frac{1}{2} = -\cos \theta + \sin \theta = 0$$

er
$$\vec{v} = l\vec{\theta} \vec{\theta} + \vec{y}\vec{j} = (l\vec{\theta} - AlsinAtsinB)\vec{\theta} \vec{\theta}$$

$$\vec{v} = mgl(1-cos\theta) + y(t)$$

$$-AlsinAtsinBtcose er$$

$$L = T - V = \frac{1}{2} m \left(l \dot{\theta} - A \Lambda s m \Lambda t s m \dot{\theta} \right)^{2}$$

$$+ \frac{1}{2} m A \Lambda^{2} s m \Lambda t \cot^{2} \theta - mgl \left(1 - \cos \theta \right) - mg A \cos^{2} \theta$$

$$= \frac{1}{2} m A^{2} \Lambda^{2} s m^{2} \Lambda t + \frac{1}{2} m l^{2} \dot{\theta}^{2}$$

$$- m A \Lambda l s m \Lambda t s m \dot{\theta} \dot{\theta} - mg l \left(1 - \cos \theta \right) - mg \Lambda \cos \Lambda t$$

 $\frac{\partial L}{\partial \dot{\theta}} = me^2 \dot{\theta} - me Ar sinrt sine - me Ar e sinrt cose$

De = - meanésinat coso - mge sino

$$\ddot{\theta} + \left(\frac{9}{2} - \frac{A \lambda^2 \cos \lambda t}{2}\right) \sin \theta = 0$$

Introduce Or Leving

$$\Theta \rightarrow \Theta$$

Sino $\approx \Theta - \frac{1}{6} \Theta^3$
 $A \rightarrow \Theta A$

$$\frac{\partial}{\partial \theta} + \left(\frac{9}{2} - \frac{\epsilon A n^2 \cos nt}{2}\right) \left(\epsilon \theta - \frac{1}{6} \epsilon^3 \theta^3\right) = 0$$

$$\frac{\partial}{\partial \theta} + \left(\frac{9}{2} - \frac{\epsilon A n^2 \cos nt}{2}\right) \left(\theta - \frac{1}{6} \epsilon^2 \theta^3\right) = 0$$

Keep to OCE) only

$$\begin{bmatrix} \circ \circ + 9 & - \epsilon A \Lambda^2 & cos \Lambda t \theta = 0 \\ 0 & t & 0 \end{bmatrix}$$