LINEARIZAR $f(\theta) = \cos\theta$ WILSON SIOU KAN CHOW 10769338

$\rightarrow \theta_0 = \emptyset$

$\cdot \cos\theta = \cos\theta_0 + \frac{\partial}{\partial\theta} \cdot \cos\theta \Big|_{\theta_0} \cdot (\theta - \theta_0) \Rightarrow$

$\Rightarrow \cos\theta = \cos(\emptyset) - \text{sen}(\emptyset) \cdot (\theta - 0) \Rightarrow$

$\boxed{\Rightarrow \cos\theta \cong 1}$

$\rightarrow \theta_0 = \pi/4$

$\cdot \cos\theta \cong \cos(\theta_0) + \frac{\partial}{\partial\theta} \cos\theta \Big|_{\theta_0} \cdot (\theta - \theta_0)$

$\Rightarrow \cos\theta = \cos\left(\frac{\pi}{4}\right) - \text{sen}\left(\frac{\pi}{4}\right) \cdot \left(\theta - \frac{\pi}{4}\right) \Rightarrow$

$\Rightarrow \cos\theta = \frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2}(\theta - \pi/4) \Rightarrow$

$\Rightarrow \boxed{\cos\theta \cong \frac{\sqrt{2} \cdot \pi}{8} - \frac{\sqrt{2}}{2}\theta}$

LINEARIZAR por EXPANSÃO em SÉRIE DE TAYLOR

- $m\dot{v} = F - mrv + mx\dot{r}$
- $\bar{v} = \bar{r} = \bar{\dot{r}} = \emptyset$ $\quad F = \emptyset$
- $m\dot{v} = f(F, r, u, \dot{r}, x)$

$$\rightarrow f(F, r, u, \dot{r}, x) = f(\bar{F}, \bar{r}, \bar{u}, \bar{\dot{r}}, \bar{x}) + \frac{\partial f}{\partial F}\Big|_{Eq}(F - \bar{F}) + \frac{\partial f}{\partial r}\Big|_{Eq}(r - \bar{r}) +$$
$$+ \frac{\partial f}{\partial u}\Big|_{Eq}(u - \bar{u}) + \frac{\partial f}{\partial \dot{r}}\Big|_{Eq}(\dot{r} - \bar{\dot{r}}) + \frac{\partial f}{\partial x}\Big|_{Eq}(x - \bar{x})$$

- $f(\bar{F}, \bar{r}, \bar{u}, \bar{\dot{r}}, \bar{x}) = \emptyset - m\bar{r}\bar{u} + m\bar{x}\bar{\dot{r}} = \emptyset$
- $\frac{\partial f}{\partial F}\Big|_{Eq}(F - \bar{F}) = 1 \cdot (F - \emptyset) = F$
- $\frac{\partial f}{\partial r}\Big|_{Eq}(r - \bar{r}) = -m\bar{u}(r - \emptyset) = -m\bar{u}r$
- $\frac{\partial f}{\partial v}\Big|_{Eq}(u - \bar{u}) = -m\bar{r}(u - \bar{u}) = \emptyset$
- $\frac{\partial f}{\partial \dot{r}}\Big|_{Eq}(\dot{r} - \bar{\dot{r}}) = m\bar{x}(\dot{r} - \emptyset) = m\bar{x}\dot{r}$
- $\frac{\partial f}{\partial x}\Big|_{Eq}(x - \bar{x}) = m\bar{\dot{r}}(x - \bar{x}) = \emptyset$

$\hookrightarrow f: m\dot{v} = F - m\bar{u}r + m\bar{x}\dot{r}$