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① $f(x) = \cos(x)$

$$f(x) \cong f(x_0) + \left.\frac{df}{dx}\right|_{x=x_0} (x - x_0)$$

$$f(x) = \cos(x_0) - \sin(x_0) \cdot (x - x_0)$$

Para $x_0 = 0$

$$f(x) = 1 - 0(x - 0) = 1$$

Para $x_0 = \pi/2$

$$f(x) = 0 - 1 \cdot (x - \pi/2)$$
$$f(x) = \pi/2 - x$$

② $m\dot{v} = F(t) - mru + m\ddot{x}\dot{r}$

$$f(x) = F(t) - mru + m\ddot{x}\dot{r} - m\dot{v}$$

$$f(x) = f(\dot{\bar{v}}, \bar{r}, \dot{\bar{r}}) + \left.\frac{df}{d\dot{v}}\right|_{eq} (\dot{v} - \dot{\bar{v}}) + \left.\frac{df}{d\bar{r}}\right|_{eq} (r - \bar{r}) + \left.\frac{df}{d\dot{r}}\right|_{eq} (\dot{r} - \dot{\bar{r}})$$

Com $eq \begin{cases} \dot{\bar{v}} = \bar{r} = \dot{\bar{r}} = 0 \end{cases}$

$$f(x) = F(t) - m\dot{v} - m\bar{u}r + m\bar{x}\dot{r}$$

$$m\dot{v} = f(t) - m\bar{u}r + m\bar{x}\dot{r}, \text{ com } f(x) = 0$$