

Nome: Bruno Akira Oshiro

NUSP: 10771667

① Linearização de  $g(x) = \cos(x)$ 

$$g(x) = \cos(\bar{x}) - \text{sen}(\bar{x})(x - \bar{x})$$

• Para  $\bar{x} = 0$ 

$$g(x) = \cos(0) - \text{sen}(0) \cdot x \\ = 1$$

• Para  $\bar{x} = \frac{\pi}{4}$ 

$$g(x) = \cos\left(\frac{\pi}{4}\right) - \text{sen}\left(\frac{\pi}{4}\right) \cdot (x - \frac{\pi}{4}) \\ = \frac{\sqrt{2}}{2} \left(1 - x - \frac{\pi}{4}\right) \\ = \frac{\sqrt{2}}{2} (0,214 - x)$$

② Linearização de  $f(F, u, r, \bar{r}, x) = F(u) - mru + mx\bar{r}$ 

$$f = \bar{F} - m\bar{r}\bar{u} + m\bar{x}\bar{r} + 1 \cdot (F - \bar{F}) - m\bar{r}(u - \bar{u}) - m\bar{u}(r - \bar{r}) + m\bar{x}(\bar{r} - \bar{r}) + m\bar{r}(x - \bar{x})$$

• com  $\bar{r} = \bar{r} = 0$ 

$$f = F - m\bar{u}r + m\bar{x}\bar{r}$$