(1º)

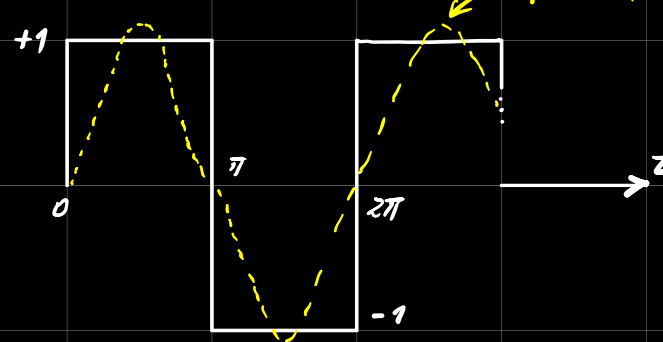
$$\rightarrow C_n = \frac{\int_{T_0} g(t)\cdot x_n(t)\,dt}{\int_{T_0} x_n^2(t)\,dt} \leftarrow$$ ANÁLISE

APROXIMAÇÃO

(2º)

SÍNTESE $g(t) = c_1 x_1(t) + c_2 x_2(t) + c_3 x_3(t) + \dots$

$c_1\,\text{sen}(t) + c_2\,\text{sen}(2t) + c_3\,\text{sen}(3t) + \dots$



(3º) $g(t)$ com a síntese

$g(t) \cong 1.27\,\text{sen}(t) + \text{erro}$

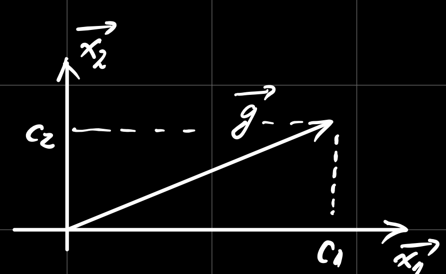
$\underbrace{\text{erro}} = g(t) - \underbrace{1.27\,\text{sen}(t)}$

$g(t) \cong 1.27\,\text{sen}(t) + \underbrace{c_3\,\text{sen}(3t)} + \text{erro}'$

c_5

erro' < erro !

c_7



$c_1\vec{x}_1 + c_2\vec{x}_2$

c_9

$\vec{x}_1 \perp \vec{x}_2$

⋮

reduzem o erro

ANÁLISE $\quad c_n = \dfrac{\int_{T_0} g(t)\, x_n(t)\, dt}{\int_{T_0} x_n^2(t)\, dt}$

SÍNTESE $\quad g(t) = c_1 x_1(t) + c_2 x_2(t) + \cdots$

$\underbrace{\text{BASE}}$ $\quad \int_{T_0} x_n(t) \cdot x_m(t)\, dt = 0$

$m \neq n$

Quais bases eu posso usar? $\quad n = \ldots, -3, -2, -1, 0, 1, 2, 3, \ldots$

Base trigonométrica $\quad \operatorname{sen}(n\omega_0 t)$, $\cos(n\omega_0 t)$ $\quad x_n(t)$

Base exponencial $\quad e^{+jn\omega_0 t}$ $\quad x_n(t)$

$$g(t) = \ldots + D_{-1} e^{-j\omega_0 t} + D_0 + \underbrace{D_1 e^{+j\omega_0 t}} + \cdots$$

$$g(t) = a_1 \operatorname{sen}(\omega_0 t) + a_2 \operatorname{sen}(2\omega_0 t) + \cdots + b_1 \cos(\omega_0 t) + b_2 \cos(2\omega_0 t) + \cdots$$