$$\frac{d}{dt}\bar{x} = A\bar{x}$$

$$\mathcal{L}\left\{\frac{d}{dt}\bar{x}\right\} = \mathcal{L}\{A\bar{x}\}$$

$$s\mathcal{L}\{\bar{x}\} - \bar{x}(0) = A\mathcal{L}\{\bar{x}\}$$

$$s\mathcal{L}\{\bar{x}\} - A\mathcal{L}\{\bar{x}\} = \bar{x}(0)$$

$$\underbrace{(sI - A)}_{n\times n}\underbrace{\mathcal{L}\{\bar{x}\}}_{n\times 1} = \underbrace{\bar{x}(0)}_{n\times 1}$$

$$\mathcal{L}\{\bar{x}\} = (sI - A)^{-1}\bar{x}(0)$$

$$\bar{x} = \mathcal{L}^{-1}\left\{(sI - A)^{-1}\right\}\bar{x}(0)$$

$$\bar{x} = e^{At}\bar{x}(0)$$

$$\boxed{e^{At} = \mathcal{L}^{-1}\left\{(sI - A)^{-1}\right\}}$$

SERIE DE FOURIER

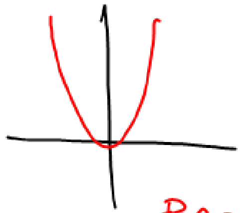
SIMETRÍA

x^2

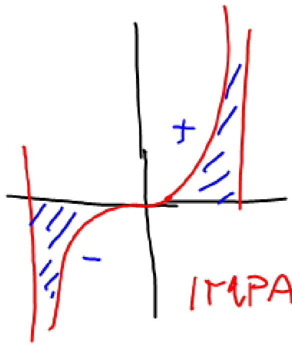
PAR $\qquad f(-x) = f(x) \qquad a \le x \le b$

IMPAR $\qquad f(-x) = -f(x) \qquad a \le x \le b$

x^3



PAR



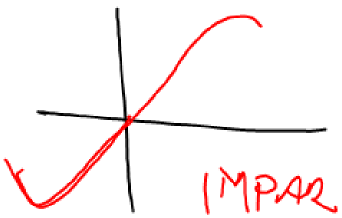
IMPAR

$$\langle \text{PAR} \rangle \langle \text{PAR} \rangle \Leftrightarrow \langle \text{PAR} \rangle$$

$$\langle \text{IMPAR} \rangle \langle \text{IMPAR} \rangle \Leftrightarrow \langle \text{PAR} \rangle$$

$$\langle \text{IMPAR} \rangle \langle \text{PAR} \rangle \Leftrightarrow \langle \text{IMPAR} \rangle$$

PAR



IMPAR

$$\int_{-L}^{L} \langle \text{IMPAR} \rangle \, dx = 0$$

$$\int_{-L}^{L} \langle \text{PAR} \rangle \, dx = 2 \int_{0}^{L} \langle \text{PAR} \rangle \, dx \neq 0$$

$$f(x) = \frac{a_0}{2} + \sum_{n=1}^{\infty} \left(a_n \cos\left(\frac{n\pi}{L}x\right) + b_n \operatorname{sen}\left(\frac{n\pi}{L}x\right) \right)$$

$$a_0 = \left(\frac{1}{L}\right) \int_{-L}^{L} f(x)\,dx \quad \begin{cases} f(x) \text{ impar} & a_0 = 0 \\ f(x) \text{ par} & a_0 \neq 0 \end{cases}$$

$$a_n = \left(\frac{1}{L}\right) \int_{-L}^{L} f(x) \cos\left(\frac{n\pi}{L}x\right) dx = \begin{cases} f(x) \text{ impar} & a_n = 0 \\ f(x) \text{ par} & a_n \neq 0 \end{cases}$$

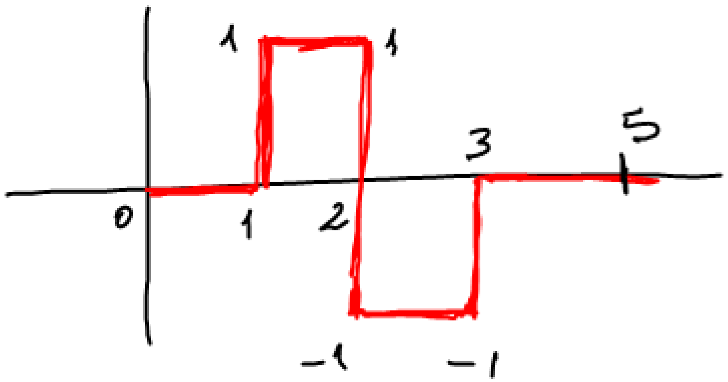
$$b_n = \left(\frac{1}{L}\right) \int_{-L}^{L} f(x) \operatorname{sen}\left(\frac{n\pi}{L}x\right) dx \quad \begin{cases} f(x) \text{ impar} & b_n \neq 0 \\ f(x) \text{ par} & b_n = 0 \end{cases}$$

$f(x)$ impar SERIE SENO

$$f(x) = \sum_{n=1}^{\infty} \left(b_n \operatorname{sen}\left(\frac{n\pi}{L}x\right) \right)$$

$f(x)$ par SERIE COSENO

$$f(x) = \frac{a_0}{2} + \sum_{n=1}^{\infty} \left(a_n \cos\left(\frac{n\pi}{L}x\right) \right).$$

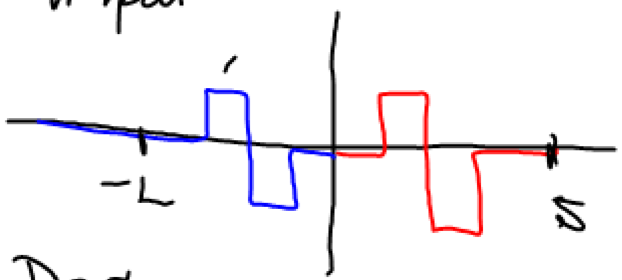


$L = 5$

$0 \leq x < 5$

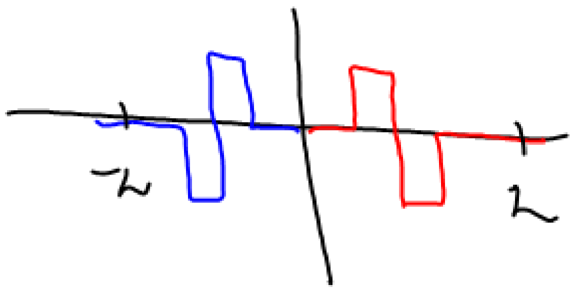
$\boxed{\ell = \frac{5}{2}}$

impar



SERIE SENO

Par



SERIE COSENO