

SERIE TRIGONOMÉTRICA FOURIER

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

$$-L \leq x \leq L$$

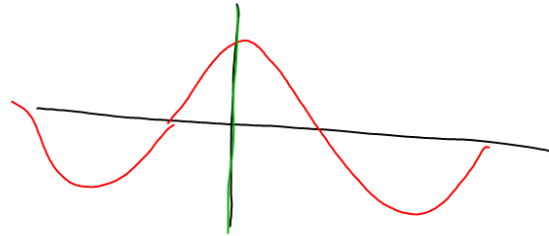
$$\leftarrow 2L \rightarrow$$

$$a_0 = \frac{1}{L} \int_{-L}^L f(x) dx$$

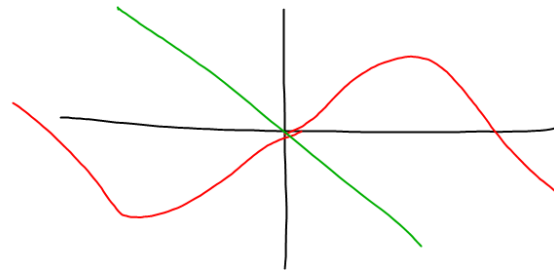
$$a_n = \frac{1}{L} \int_{-L}^L f(x) \cos\left(\frac{n\pi}{L}x\right) dx$$

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

Función PAR



Función IMPAR



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

$$\langle \text{impar} \rangle \langle \text{impar} \rangle \Leftrightarrow \langle \text{par} \rangle$$

$$\langle \text{par} \rangle \langle \text{impar} \rangle \Leftrightarrow \langle \text{impar} \rangle$$

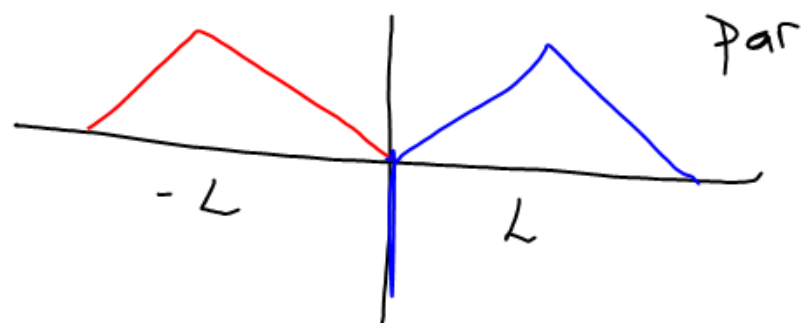
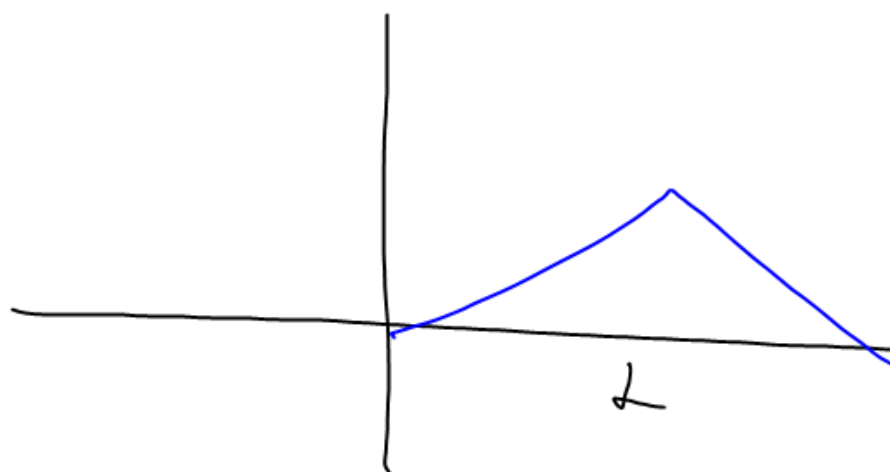
$$f = \cos(ax)$$

$$a[n] = \frac{1}{L} \int_{-L}^L \cos(ax) \cdot \cos\left(\frac{n\pi}{L}x\right) dx \Leftrightarrow \text{PAR}$$

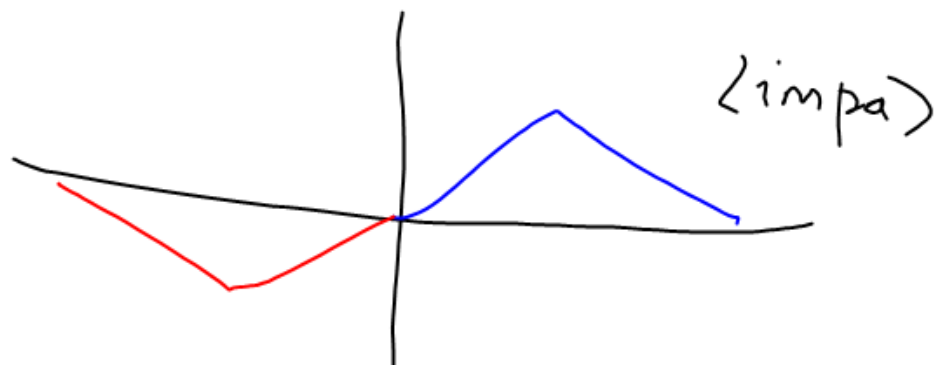
$$b[n] = \frac{1}{L} \int_{-L}^L \cos(ax) \sin\left(\frac{n\pi}{L}x\right) dx \Leftrightarrow \text{IMPAR}$$

$$\int \langle \text{IMPAR} \rangle dx = 0$$

$$\int_{-L}^L \langle \text{PAR} \rangle dx = 2 \int_0^L \langle \text{par} \rangle \neq 0$$



STF $a[0] \neq 0$
 $a[n] \neq 0$
 $b[n] = 0$



STF $a[0] = 0$
 $a[n] = 0$
 $b[n] \neq 0$