$$\frac{\partial y(x,t)}{\partial x} + \frac{\partial^2 y(x,t)}{\partial x \partial t} - \frac{\partial y(x,t)}{\partial t.} = 0$$

$$H_0 = P(x) \cdot Q(t)$$

$$\frac{\partial y}{\partial x} = P'(x) \cdot Q(t) \qquad \frac{\partial^2 y(x,t)}{\partial x \partial t} = P'(x) \cdot Q'(t)$$

$$\frac{\partial y}{\partial t} = P(x) \cdot Q'(t)$$

$$P'(x) \cdot Q(t) + P'(x) Q'(t) - P(x) \cdot Q'(t) = 0$$

$$P'(x) \cdot Q(t) + P'(x) Q'(t) = P(x) \cdot Q'(t)$$

$$P'(x) \left[Q(t) + Q'(t) \right] = P(x) \cdot Q'(t)$$

$$\frac{P'(x)}{P(x)} = \frac{Q'(t)}{Q(t) \cdot Q'(t)}$$

$$H_0 = P(x)\, Q(y)$$

$$H_1 = P(x) + Q(y)$$

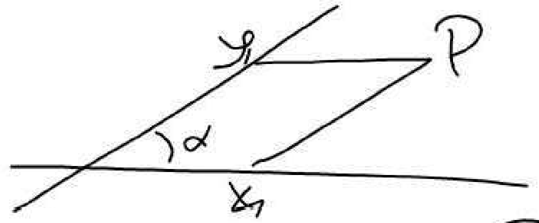
$$H_2 = P(x)^y$$

$$H_3 = Q(y)^x$$

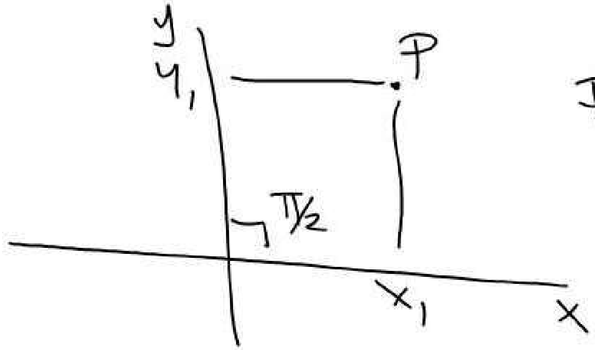
$$H_4 = P(x)\, L y$$

$$H_5 = Q(y)\, L x$$

$y(t) =$

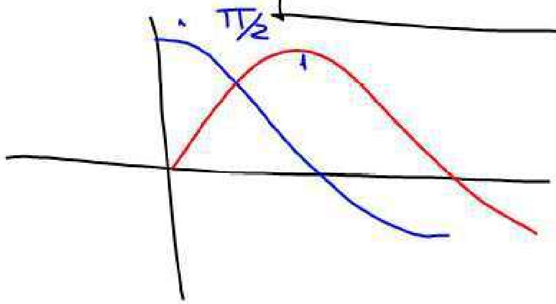


$P(x_1, y, \alpha)$



$P(x_1, y_1)$

sen(x) cos(x)



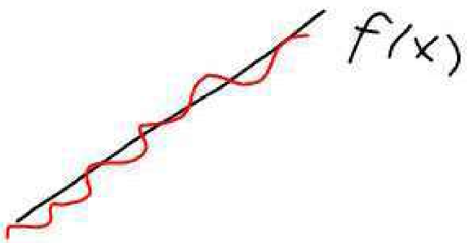
Serie Trigonométrica FOURIER

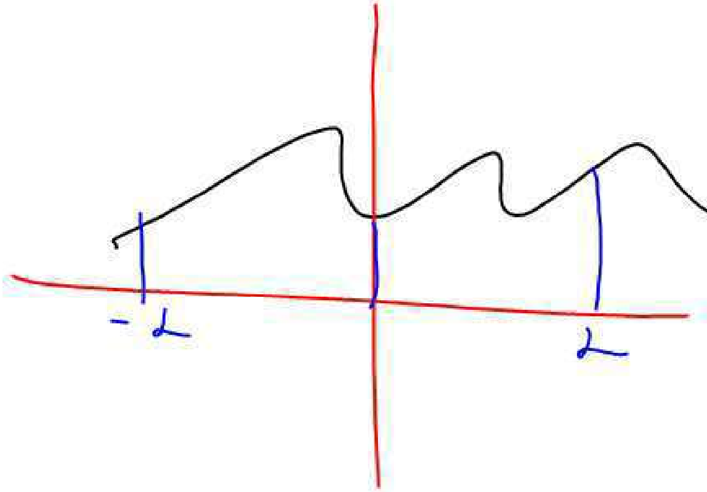
$$f(x) = \frac{a_0}{2} + \sum_{n=1}^{\infty} \left(a_n \cos \frac{n\pi}{L} x + b_n \operatorname{sen} \frac{n\pi}{L} x \right).$$

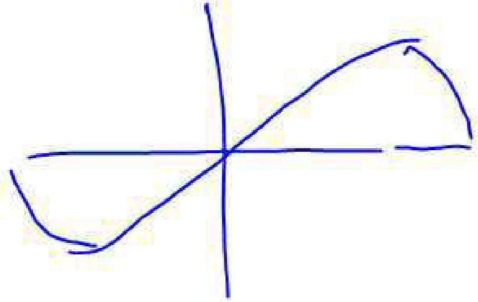
$$a_0 = \frac{1}{L} \int_{-L}^{L} f(x)\, dx$$

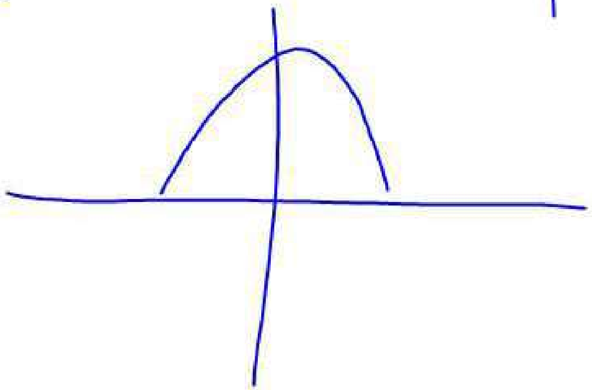
$$a_n = \frac{1}{L} \int_{-L}^{L} f(x) \cos\left(\frac{n\pi}{L} x\right) dx$$

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




-2
2





SERIE TRIGONOMÉTRICA DE FOURIER

Método de Separación Variables

EDenDP

SG1 SG2 SG3

CI
y/o
CF

f(x) particular

FORMA tendrá

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

$-L < x < L$

$$a_0 = \frac{1}{L}\int_{-L}^{L} f(x)\,dx \longrightarrow \underline{\underline{\text{Valor}}}$$

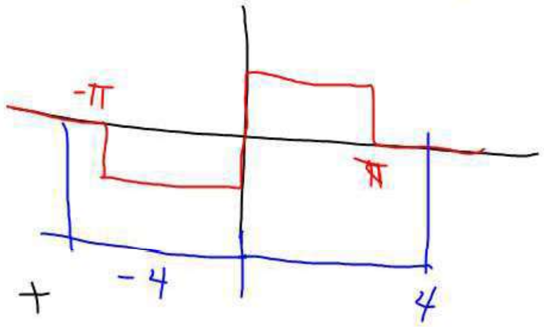
$$a_n = \frac{1}{L}\int_{-L}^{L} f(x)\cos\left(\frac{n\pi}{L}x\right)dx$$

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

e^{2x}

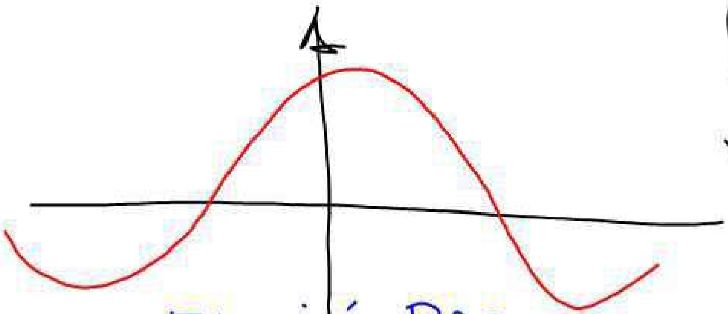
$-2 < x < 2$ $\qquad a_0 \doteq 13.6$

$L = 2$



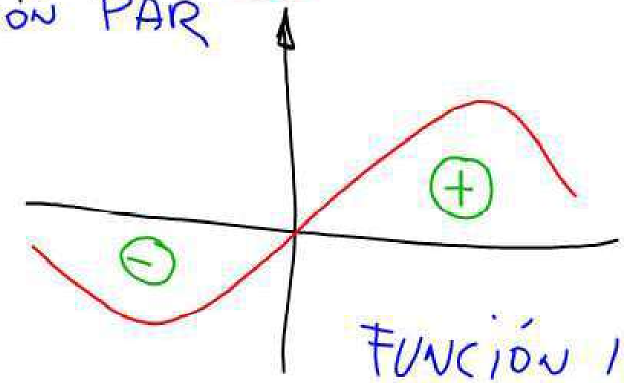
$$g = -\mu(t+\pi) + 2(\mu(t)) - \mu(t-\pi)$$

$L = 4$



FUNCIÓN PAR

$$\int_{-L}^{L} \cos(t)\,dt = 2\int_{0}^{L} \cos(t)\,dt \neq 0$$



FUNCIÓN IMPAR

$$\int_{-L}^{L} \operatorname{sen}(t)\,dt = 0$$

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

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

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

$f \Rightarrow$ par

$$a_0 = \frac{1}{L}\int_{-L}^{L} f\, dt \neq 0$$

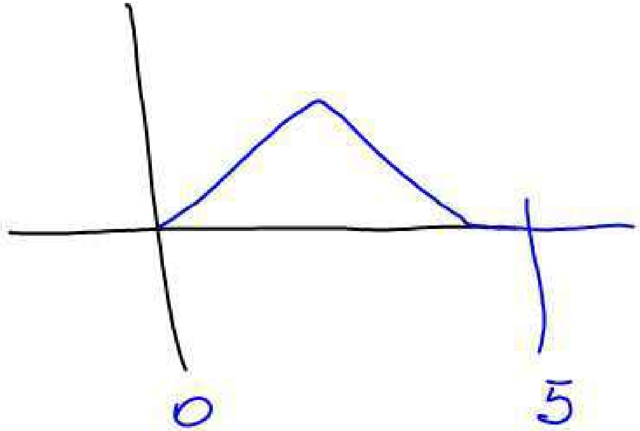
$$a_n = \frac{1}{L}\int_{-L}^{L} f \cdot \cos\left(\frac{n\pi}{L}t\right) dt \neq 0$$

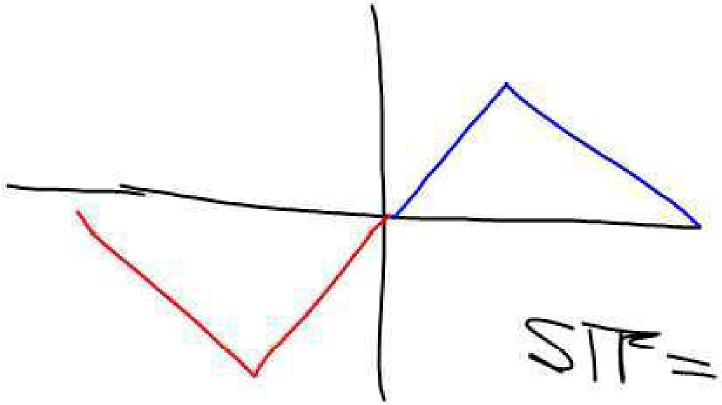
$$b_n = \frac{1}{L}\int_{-L}^{L} f \cdot \operatorname{sen}\left(\frac{n\pi}{L}t\right) dt = 0$$

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

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

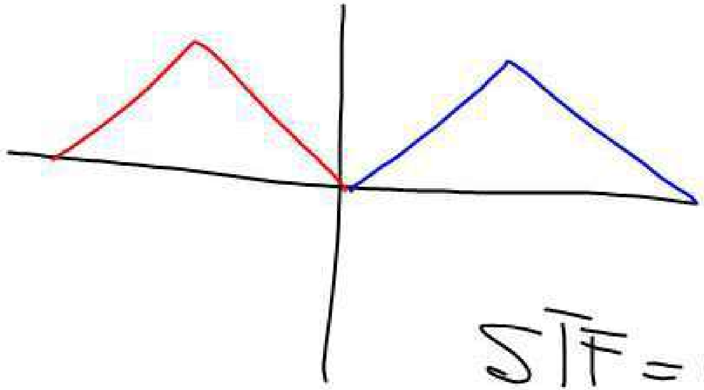
$h =$





impar

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



par

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