## Clase 16-11-21

Tema IV - EDenDP

no conocemos su forma

$$F\left(x,y,z,\frac{\partial z}{\partial x},\frac{\partial z}{\partial y},\dots\right)=0 \rightarrow z(x,y)=F_1(x,y)+F_2(x,y)+\dots+F_n(x,y)$$

Solución general

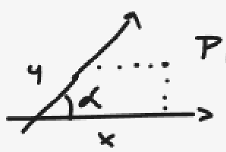
puede no ser lineal

condiciones $\begin{cases}\text{iniciales}\\ \text{frontera}\end{cases}$ o ambas

$Z_{particular}$

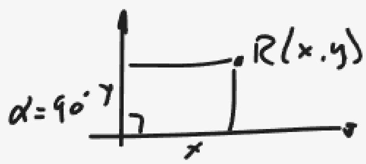
Los matemáticos siglo XIX

* SERIE TRIGONOMÉTRICA FOURIER



$P(x,y,\alpha)$

$\alpha \Rightarrow$ ángulo entre ejes.

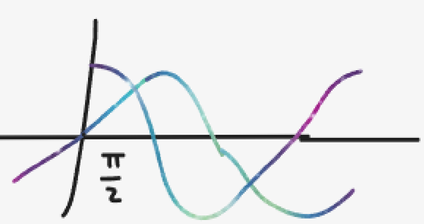


$R(x,y)$

Sistema Cartesiano

dos funciones que tengan propiedad cartesiana entre sí, podremos representar cualquier función $f(t)$ en términos de ellas.

$\operatorname{sen}(bt)$ y $\cos(bt)$



$$f(t)=F(\cos(bt),\operatorname{sen}(bt))$$


$-L < t < L$

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

$$C = \frac{a_0}{2} \qquad a_0 = \frac{1}{L}\int_{-L}^{L} f(t)\,dt$$

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

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

SERIE TRIGONOMÉTRICA DE FOURIER

Una función es impar $f(t)$

$f(-t) = -f(t)$ $\Big\}$ $t$

$a_0 = 0$

$a_n = 0$

$b_n \neq 0$

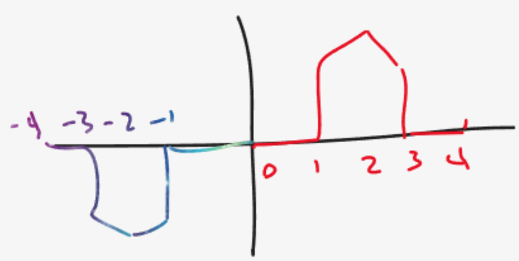
Una función es par $f(t)$

$f(-t) = f(t)$ $\Big|$ $t^2$

$a_0 \neq 0$

$a_n \neq 0$

$b_n = 0$




$-4 < t < 4$

$L = 4$