$y(x,t)$

$$\frac{\partial y}{\partial x} + x\frac{\partial^2 y}{\partial t^2} = 5y$$

H: $y(x,t) = F(x)\cdot G(t)$

$$\frac{\partial y}{\partial x} = F'G \qquad \frac{\partial y}{\partial t} = FG' \qquad \frac{\partial^2 y}{\partial t^2} = FG''$$

$$F'G + xFG'' = 5FG$$

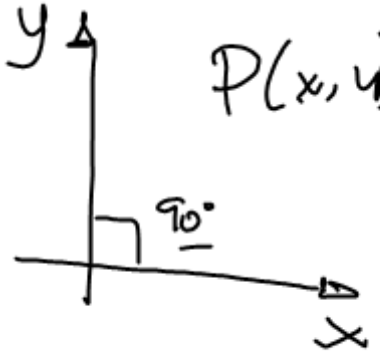
$$F'G - 5FG = -xFG''$$

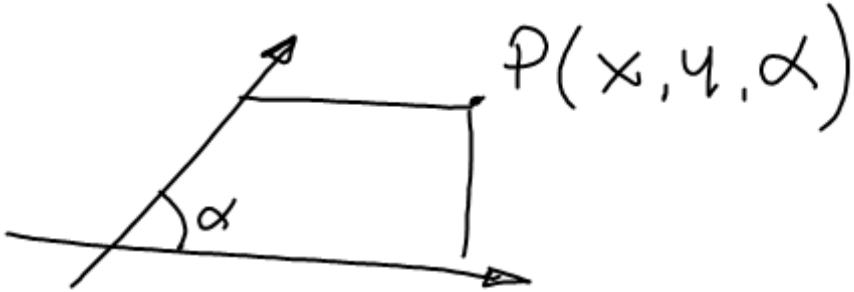
$$\frac{F' - 5F}{xF} = \frac{-G''}{G}$$

$$\frac{F' - 5F}{xF} = \alpha \qquad -\frac{G''}{G} = \alpha$$

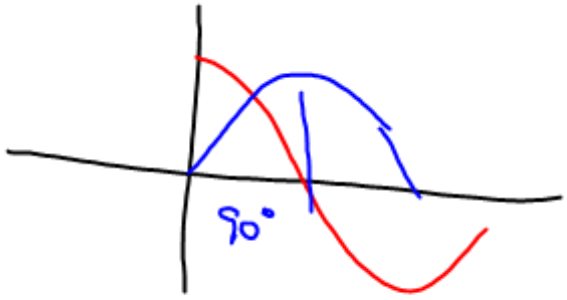
SERIE TRIGONOMÉTRICA DE FOURIER

$f(t) =$





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



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

$$\underbrace{-L < t < L}$$

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

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

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