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Ejercicio. Teorema de Perseval

$$\frac{1}{\pi}\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \left(\frac{At}{\pi}\right)^2 dt$$

$$f(t) = \begin{cases} \frac{At}{\pi} & -\pi < t < \pi \end{cases}$$

Serie trigonométrica de Fourier

$$f(t) = \frac{2A}{\pi}\sum_{n=1}^{\infty}\frac{(-1)^{n-1}}{n}\operatorname{sen} n\omega t$$

1a integral

$$A - \text{sn}$$

$$P_T = \frac{A^2}{3}$$

Desarrollando 5 terminos (Me toco la serie)

2.-

$$\frac{2A}{\pi}\operatorname{sen}(\omega t) - \frac{2A}{2\pi}\operatorname{sen}(2\omega t) + \frac{2A}{3\pi}\operatorname{sen}(3\omega t) - \frac{2A}{4\pi}\operatorname{sen}(4\omega t) + \frac{2A}{5\pi}\operatorname{sen}(5\omega t)$$

$b_1 = n=1 = \frac{2A}{\pi}^2 =$

$b_2 = n=2 = \frac{A}{\pi}^2 =$

$b_3 = n=3 = \frac{2A}{3\pi}^2 =$

$b_4 = n=4 = \frac{2A}{4\pi}^2 =$

$b_5 = n=5 = \frac{2A}{5\pi}^2 =$

$$\frac{1}{2}\left[b_1^2 + b_2^2 + \ldots + b_n^2\right] = 0.2965$$

$$= 0.2965$$

3.-

100% $\frac{A^2}{3}$

X 0.2965

$X = 88.95\%$