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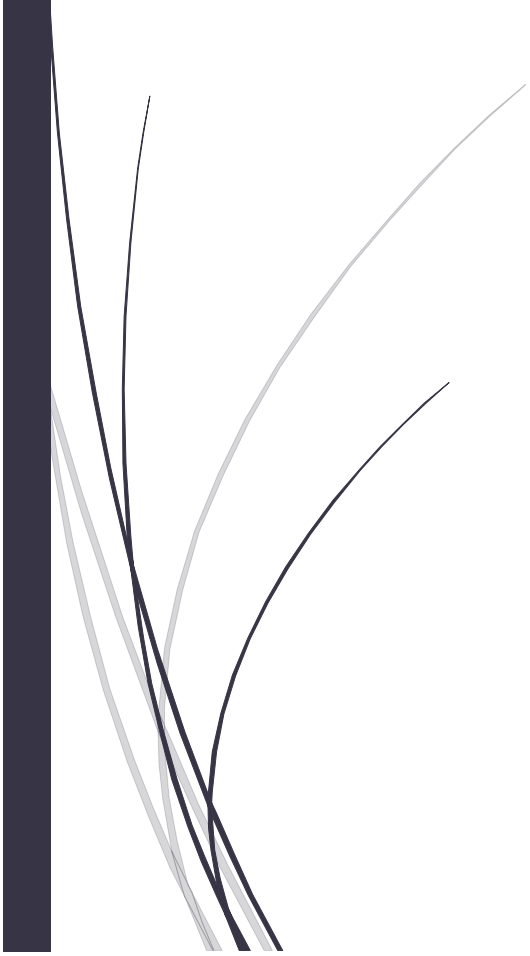
Evidencia 1.4

Martínez Coronel Brayan Yosafat



En $2\pi < t < 3\pi$ $f(t) = \text{sen } t$, como se sabe es impar*

pero es par porque no son $2\pi = T$, sino $T = \pi$, que es simétrico a y

$\omega = 2\pi/\pi = 2$ $\quad T = \pi$ $\quad b_n = 0$

$$a_n = \frac{2}{\pi}\int_{2\pi}^{3\pi} \text{sen } t \cos 2nt\,dt = \frac{1}{\pi}\int_{2\pi}^{3\pi} [\text{sen } t(1+2n) + \text{sen } t(1-2n)]\,dt$$

$$= \frac{1}{\pi}\left[\frac{-\cos t(1+2n)}{2n+1} - \frac{\cos t(2n-1)}{-2n+1}\right]_{2\pi}^{3\pi}$$

$1+2n$, $2n-1$ son impares

$\cos(\text{par}) = 1$ $\quad \cos(\text{impar}) = -1$

$$= \frac{1}{\pi}\left[\frac{-\cos 3\pi\,\text{impar}}{2n+1} - \frac{\cos t(3\pi\,\text{impar})}{-2n+1} + \left(\frac{\cos(2\pi\,\text{impar})}{2n+1} + \frac{\cos(2\pi\,\text{impar})}{-2n+1}\right)\right.$$

$$= \frac{1}{\pi}\left[\frac{2}{2n+1} - \frac{2}{2n-1}\right] = \frac{2}{\pi}\left(\frac{1}{2n+1} - \frac{1}{2n-1}\right)$$

impar * impar = impar

par * impar = par

$$a_0 = \frac{1}{\pi}\int_{2\pi}^{3\pi} \text{sen } t\,dt = 2/\pi$$

$$f(t) = \frac{2}{\pi} + \sum_{n=1}^{\infty} \frac{2}{\pi}\left(\frac{1}{2n+1} - \frac{1}{2n-1}\right)\cos(2nt)$$

*Sólo se quiere la mitad del seno, por lo que deja de ser impar. su equivalente es $|\text{sen } t|$, que es par

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$$f(t) = \frac{2}{\pi} + \sum_{n=1}^{100} \frac{2}{\pi}\left(\frac{1}{2n+1} - \frac{1}{2n-1}\right)$$

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