

A dark blue vertical bar runs along the left edge of the page. A blue arrow-shaped banner points to the right from this bar, containing the date. In the bottom-left corner, several thin, curved lines in dark blue and light grey sweep upwards and to the right.

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Evidencia 1.4

Martínez Coronel Brayan Yosafat

En $2\pi < t < 3\pi$ $f(t) = \sin t$, como se sabe es impar*

pero es par porque $\omega = 2\pi/\pi = 2$ $T = \pi$ $b_n = 0$
 no son $2\pi = T$, sino $T = \pi$, que es simétrico a y

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

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

$1+2n, 2n-1$ son impares
 $\cos(\text{par}) = 1$ $\cos(\text{impar}) = -1$

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

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

impar * impar = impar
 par * impar = par

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

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

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



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

