



f é uma função **PAR**,

$$f(x) = \begin{cases} 2 - 2x, & 0 \leq x \leq 1 \\ x - 1, & 1 \leq x \leq 2 \\ f(-x), & -2 \leq x \leq 0 \end{cases}$$

$$b_k = 0, \quad k \geq 1$$

$$T = 4, \quad k \frac{2\pi}{T} = k \frac{\pi}{2}$$

$$a_0 = \frac{1}{4} \int_{-a}^a f(x) dx = (P \times P)$$

$$= \frac{1}{2} \int_0^a f(x) dx$$

$$= \frac{1}{2} \left[\int_0^1 (2-2x) dx + \int_1^2 (x-1) dx \right]$$

$$= \frac{1}{2} \left[2 - 1 + \frac{1}{2} \right]$$

$$= \frac{3}{4}$$

$$k \geq 1$$

$$a_k = \frac{1}{\pi} \int_{-\pi}^{\pi} f(x) \cos\left(k \cdot \frac{\pi}{a} x\right) dx$$

PAR

$$= \int_0^{\pi} f(x) \cos\left(k \cdot \frac{\pi}{a} x\right) dx$$

$$= \int_0^1 2(1-x) \cdot \cos\left(k \cdot \frac{\pi}{2} x\right) dx$$

I

$$+ \int_1^2 (2x-1) \cos\left(k \cdot \frac{\pi}{2} x\right) dx$$

II

$$\textcircled{I} = 2 \int_0^1 (1-x) \cos\left(\frac{k\pi}{2}x\right) dx$$

$$\text{or } u = 1-x \quad v' = \cos\left(\frac{k\pi}{2}x\right)$$

$$u' = -1 \quad v = \frac{2}{k\pi} \sin\left(\frac{k\pi}{2}x\right)$$

$$= 2 \left[\frac{2}{k\pi} (1-x) \sin\left(\frac{k\pi}{2}x\right) \right]_0^1$$

$$+ \frac{2}{k\pi} \int_0^1 \sin\left(\frac{k\pi}{2}x\right) dx$$

$$= \frac{4}{k\pi} \cdot \left(\frac{2}{k\pi} \cos\left(\frac{k\pi}{2}x\right) \right) \Big|_0^1$$

$$= \frac{8}{k^2\pi^2} \left[1 - \cos\left(\frac{k\pi}{2}\right) \right]$$

CONTINUA ...