

A série de Fourier de  $f(x) = \begin{cases} 5, & \text{se } -\pi < x \leq 0 \\ 0, & \text{se } 0 < x < \pi \end{cases}$  considerando que  $f(x + 2\pi) = f(x)$ , corresponde a:

$$a_0 = \frac{1}{\pi} \int_{-\pi}^0 5 \, dx = \frac{1}{\pi} (5x) \Big|_{-\pi}^0 = \frac{1}{\pi} ((0 - (-5\pi))) = 5$$

$$a_n = \frac{1}{\pi} \int_{-\pi}^0 5 \cos(nx) \, dx = \frac{5}{\pi} \left( \frac{1}{n} \operatorname{sen}(nx) \Big|_{-\pi}^0 \right) = \frac{5}{n\pi} (0 + 0) = 0$$

$$b_n = \frac{1}{\pi} \int_{-\pi}^0 5 \operatorname{sen}(nx) \, dx = -\frac{5}{n\pi} (\cos(nx) \Big|_{-\pi}^0) = -\frac{5}{n\pi} (1 - \cos(n\pi)) = \frac{-5 + 5(-1)^n}{n\pi}$$

$$\rightarrow SFf(x) \cong \frac{5}{2} + \sum_n \frac{-5 + 5(-1)^n}{n\pi} \operatorname{sen}(nx)$$

<https://www.geogebra.org/m/tgkmn4wm>