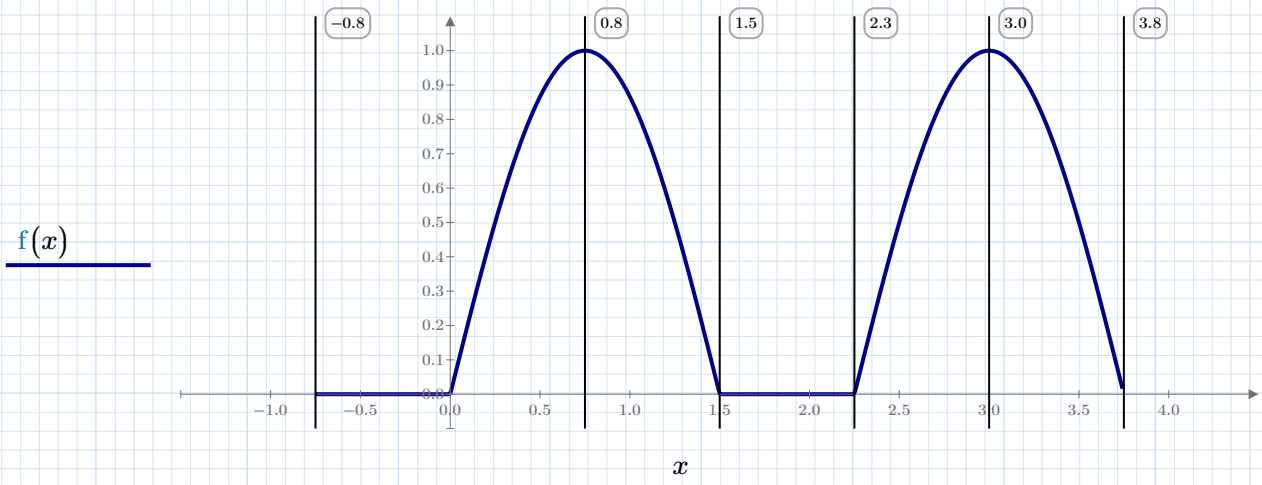


$$f(x) := \begin{cases} \text{if } \left(-\frac{3}{4} \leq x\right) \wedge (x \leq 0) \\ \quad \parallel \\ \quad 0 \\ \text{else if } (0 < x) \wedge \left(x \leq \frac{3}{2}\right) \\ \quad \parallel \\ \quad \sin\left(\frac{2 \cdot \pi}{3} x\right) \\ \text{else if } \left(\frac{3}{2} < x\right) \wedge \left(x \leq \frac{9}{4}\right) \\ \quad \parallel \\ \quad 0 \\ \text{else if } \left(\frac{9}{4} < x\right) \wedge \left(x \leq \frac{15}{4}\right) \\ \quad \parallel \\ \quad \sin\left(\pi \cdot \left(\frac{5}{2} - \frac{2 \cdot x}{3}\right)\right) \end{cases}$$

$$FC(f, N, L) := \begin{cases} Z^{(0)} \leftarrow \left[ \frac{1}{2 \cdot L} \cdot \int_{-L}^L f(x) dx \right] \\ \text{for } n \in 1 \dots N \\ \quad Z_{n,0} \leftarrow \frac{1}{L} \cdot \int_{-L}^L f(x) \cdot \cos\left(\frac{n \cdot \pi \cdot x}{L}\right) dx \\ \quad Z_{n,1} \leftarrow \frac{1}{L} \cdot \int_{-L}^L f(x) \cdot \sin\left(\frac{n \cdot \pi \cdot x}{L}\right) dx \end{cases}$$



### Berechnung der Fourier-Koeffizienten

$$L := 1 \quad Nt := 50$$

$$res := FC(f, Nt, L)$$

$$A := res^{(0)} \quad B := res^{(1)}$$

$$p(x) := A_0 + \sum_{n=1}^{Nt} \left( A_n \cdot \cos\left(\frac{n \cdot \pi \cdot x}{L}\right) + B_n \cdot \sin\left(\frac{n \cdot \pi \cdot x}{L}\right) \right)$$

