

Exercício da Página 2 do Capítulo 3: implementar no MATHCAD a interpolação da função:

$$y = f(x) = \frac{\sinh(\Phi x)}{x \sinh(\Phi)}$$

$$\text{TOL} := 10^{-9}$$

$$\Phi := 5 \quad c := \sinh(\Phi)$$

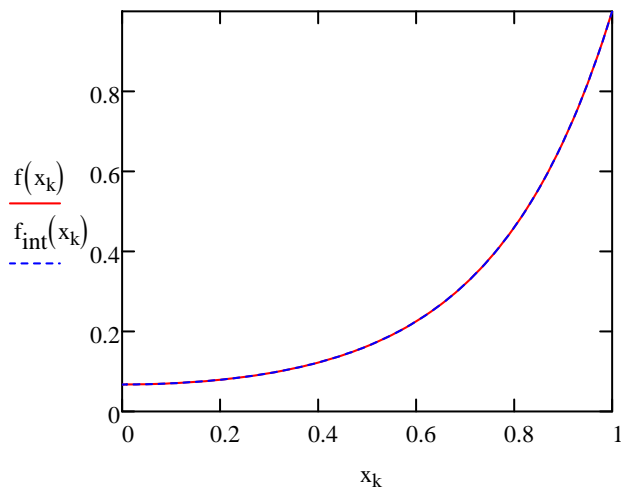
$$f(x) := \begin{cases} y \leftarrow \frac{\Phi}{c} & \text{if } x = 0 \\ y \leftarrow \frac{\sinh(\Phi \cdot x)}{x \cdot c} & \text{otherwise} \end{cases}$$

$$\text{Coef}(\Delta x) := \begin{cases} n \leftarrow \frac{.8}{\Delta x} \\ \text{for } i \in 0..n \\ \quad x \leftarrow .1 + i \cdot \Delta x \\ \quad \text{pot} \leftarrow 1 \\ \quad b_i \leftarrow f(x) \\ \quad \text{for } j \in 0..n \\ \quad \quad A_{i,j} \leftarrow \text{pot} \\ \quad \quad \text{pot} \leftarrow \text{pot} \cdot x \\ c \leftarrow \text{lsolve}(A, b) \\ c \end{cases}$$

$$p_{\text{int}}(x, c) := \begin{cases} n \leftarrow \text{last}(c) \\ y \leftarrow c_n \\ \text{for } i \in n - 1..0 \\ \quad y \leftarrow y \cdot x + c_i \end{cases}$$

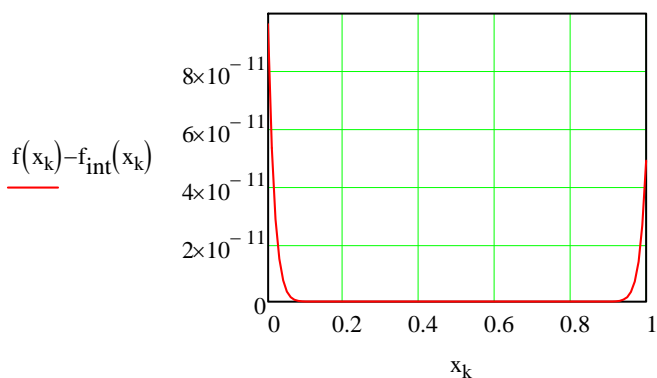
$$\Delta x := .04 \quad c := \text{Coef}(\Delta x) \quad f_{\text{int}}(x) := p_{\text{int}}(x, c)$$

$$k := 0..100 \quad x_k := \frac{k}{100}$$



Comparação entre a função e sua forma interpolada

$$\Delta x = 0.04$$



Erro da Interpolação Polinomial