Demonstration of Fourier series

First, create variables for odd harmonics, even harmonics, and all harmonics. Odd harmonic variable would be 1 for an odd number, and 0 for an even number. The even harmonic variable would be 1 for an even number, and 0 for an odd number. The all variable would be 1 for odd or even.

$$odd(i) := \mathrm{mod}(i, 2) \qquad even(i) := \mathrm{mod}(i+1, 2) \qquad all(i) := 1$$

For a specific time function, determine wheter there are only odd, eve, or all harmonics

$$oddeven(i) := odd(i)$$

Select how many harmonics you want to view

$$n := 5$$

Create a function that is based on the Fourier series from calculations or from Table 9-2

$$g(i,t) := \frac{2 \cdot \sin(i \cdot \pi \cdot t)}{i \cdot \pi}$$

Determine the resulting time functino, placing the appropriate odd/even function in the summation sign

$$f(t) := \sum_{i=0}^{n} g(i,t) \cdot odd(i)$$

Determine the time axis (based on the fundamental frequency)

$$t := 0, .01 .. 4$$

Inputs

$$\mathbf{X}_1 := t$$

$$\mathbf{Y}_1 := f(t)$$