

Fourier Analyse

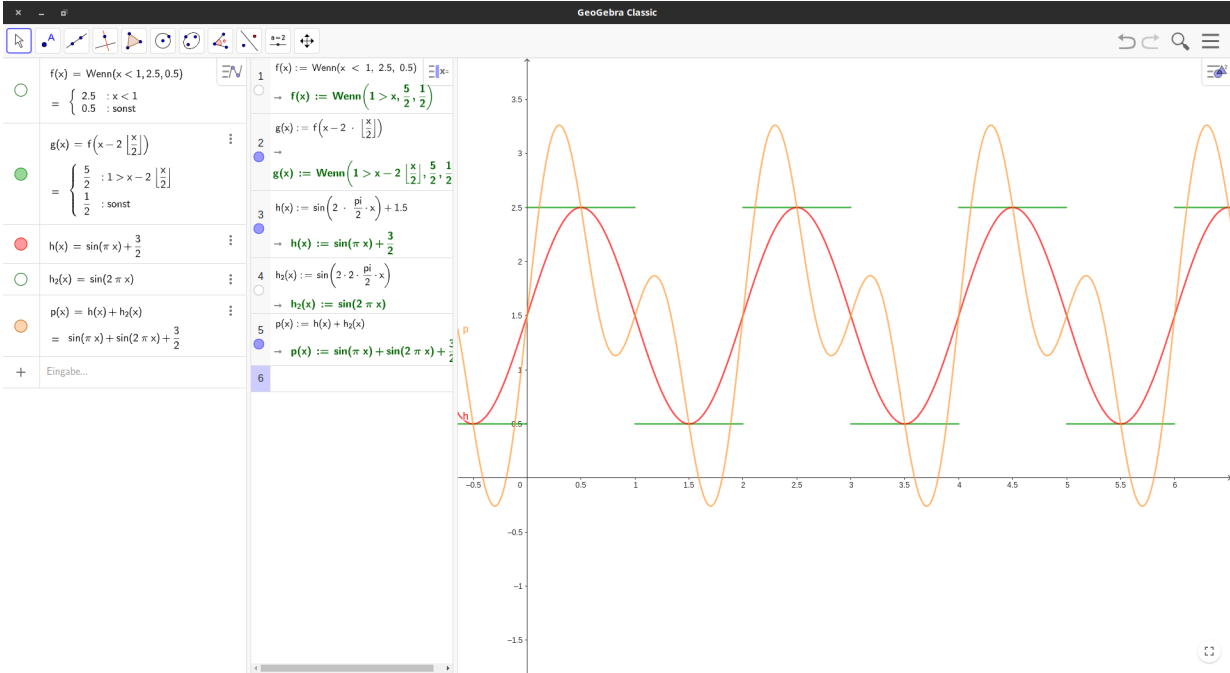


Fig. 1: Einführung Fourier Analyse

B.S. 64

$$f(t) = \frac{a_0}{2} + \sum_{n=1}^{\infty} (a_n * \cos(n\omega_0 t) + b_n * \sin(n\omega_0 t)) \Big|_{\omega_0 = \frac{2\pi}{T}}$$

$$a_0 = \frac{2}{T} * \int_0^{\text{periodendauer}} f$$

3.43b

(BS. 63)

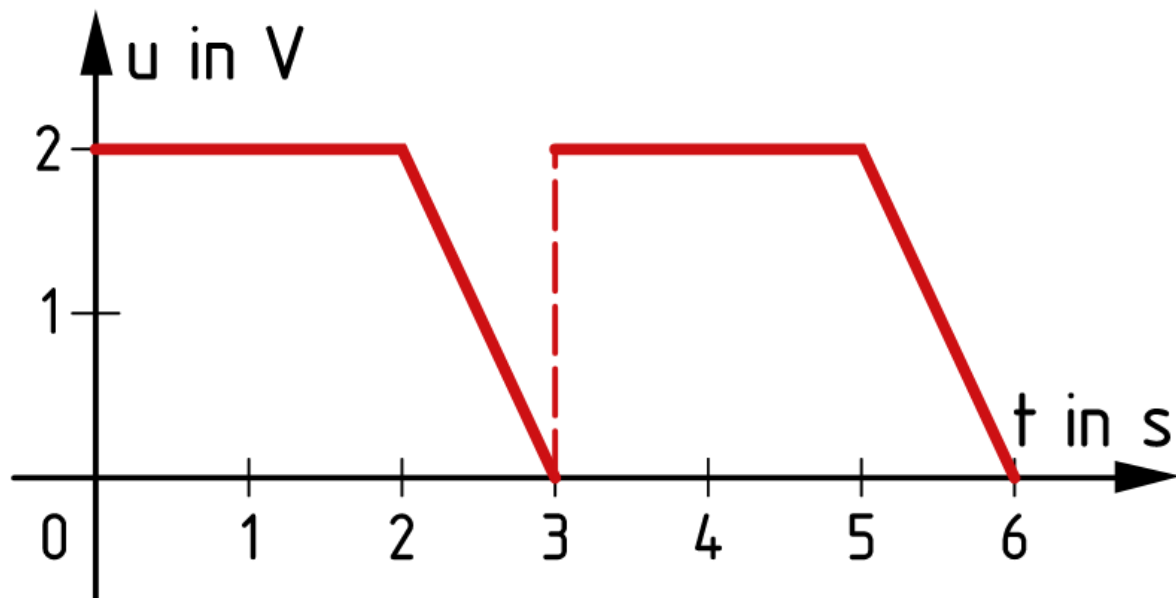


Fig. 2: Trapezkurve

$$T = 3$$

Gerader Teil
 $y = 2$

Gefälle (Periode von -1 bis 2)
 $y = -2x + 0$

$$a_0 = \frac{2}{T} * \int_{-1}^2 f(x)$$

Aus dem Buch:

$$a(n) := \frac{2}{T} * \int_{-1}^2 f(x) * \cos(n * w * x)$$

$$b(n) := \frac{2}{T} * \int_{-1}^2 f(x) * \sin(n * w * x)$$

$$t(x) := \frac{a_0}{2} + \sum_1^{10} (a(n) * \cos(n * w * x) + b(n) * \sin(n * w * x), n, 1, 10)$$

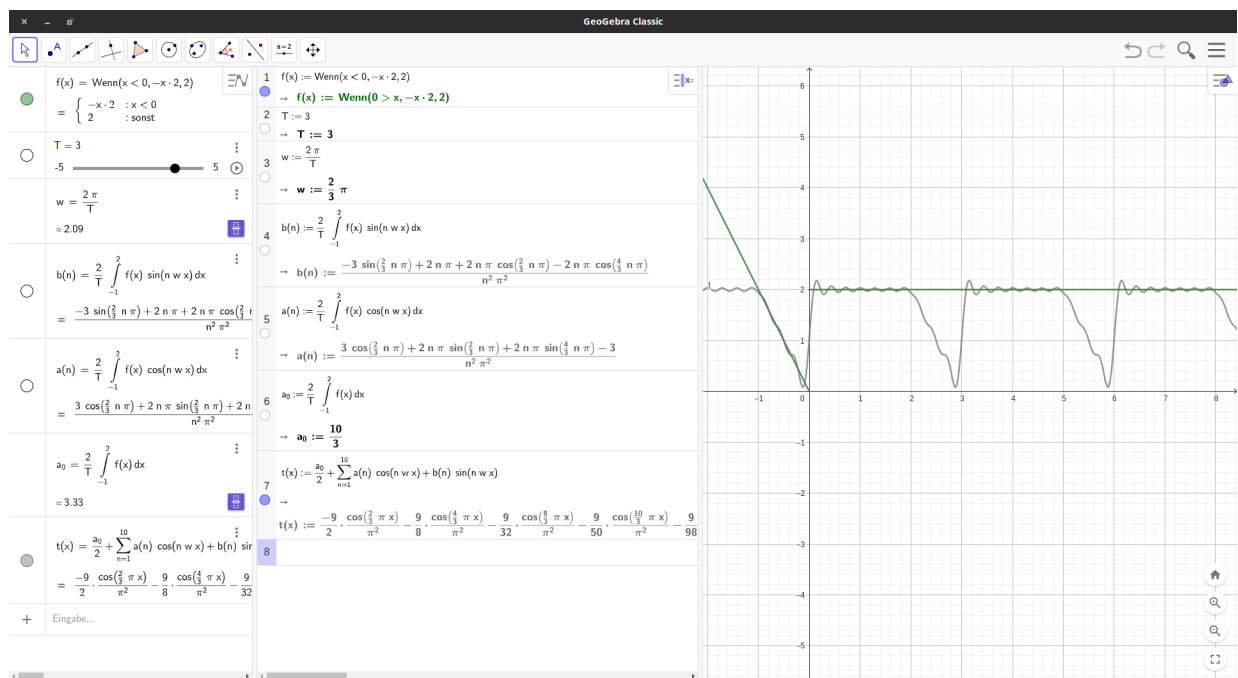


Fig. 3: Geogebra

[Bsp. 3.43](#)