Formulas:

• The complex Fourier series expansion of a function $f(t)$ of period $L$ can be written as

$$f(t) = \sum_{n=-\infty}^{\infty} c_n e^{in\frac{2\pi}{L}t},$$

where the coefficients are given by

$$c_n = \frac{1}{L} \int_{t_0}^{t_0+L} f(t) e^{-in\frac{2\pi}{L}t} dt.$$

Questions:

1. Compute the complex Fourier series of the following periodic function, and simplify all the terms with $|n| \leq 4$ explicitly.

2. Convert the complex Fourier series found in the previous problem to a real Fourier series. Check that the coefficients are actually real-valued.