

Quiz 8

1. Find the coefficient a_4 in the Fourier series representation of

$$f(x) = \begin{cases} -x & -2 \leq x < 0 \\ x & 0 \leq x < 2 \end{cases}$$

$$f(x) = \frac{a_0}{2} + \sum_{m=1}^{\infty} \left(a_m \cos \frac{m\pi x}{L} + b_m \sin \frac{m\pi x}{L} \right)$$

where

$$a_m = \frac{1}{L} \int_{-L}^L f(x) \cos \frac{m\pi x}{L} dx, \quad m = 0, 1, 2, \dots$$

and

$$b_m = \frac{1}{L} \int_{-L}^L f(x) \sin \frac{m\pi x}{L} dx, \quad m = 1, 2, 3, \dots$$