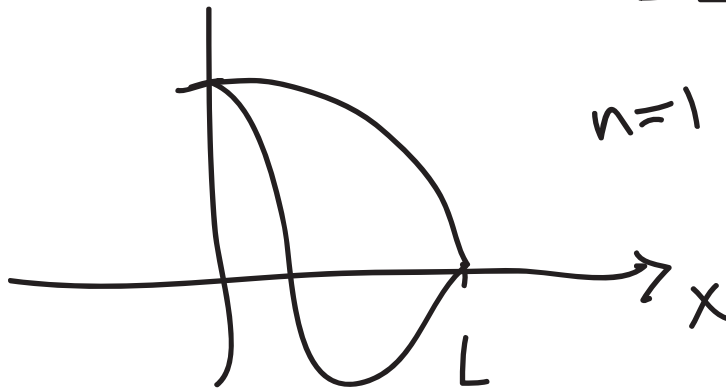


The relationship between symmetries of a function and zero coefficients in a F.S.

$$f(x) = \frac{1}{1+x} \text{ on } [0, L]$$

Write down a F.S. that converges to $f(x)$ on $(0, L)$ and consists only of terms $\cos \frac{n\pi x}{2L}$ with n odd.



$$n = 1, 3, 5, \dots$$

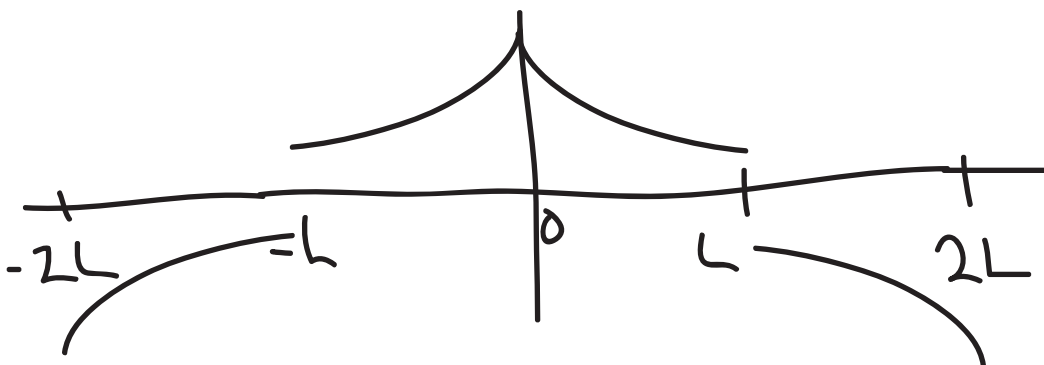
$$\rightarrow a_n = \frac{1}{Q} \int_{-Q}^Q f_e(x) \cos \frac{n\pi x}{Q} dx$$

$$b_n = \frac{1}{Q} \int_{-Q}^Q f_e(x) \sin \frac{n\pi x}{Q} dx$$

$$\begin{array}{c} + \quad | \quad + \\ -Q \quad Q \\ -2L \quad 2L \end{array}$$

$$Q = 2L$$

$$b_n = 0$$



$$a_n = \frac{4}{2L} \int_0^L f(x) \cos \frac{n\pi x}{2L} dx \quad \text{for } n \text{ odd,}$$

$$a_n = 0 \quad \text{for } n \text{ even.}$$