

## FOURIER ANALYSIS & METHODS GOALS FOR 2020.01.27

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### 1. LEARNING OBJECTIVES

Our goals for today are that:

- (1) You will be able to estimate

$$\sum_{n \in \mathbb{Z}} |c_n|^2$$

where  $c_n$  are the Fourier series of a function which is in  $\mathcal{L}^2([-\pi, \pi])$ .

- (2) You will be able to say what the Fourier series

$$\sum_{n \in \mathbb{Z}} c_n e^{inx}$$

converges to for any point  $x \in \mathbb{R}$ .

- (3) You will be able to use the preceding ability to compute nifty sums like

$$\sum_{n \geq 1} \frac{1}{n^2}.$$

Ready, set, let's go!