

Worksheet 9

Due: Thursday, October 23

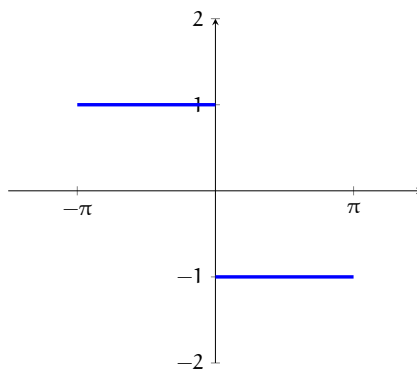
No integration is required on this worksheet.

1. Compute the Fourier series for $f(x) = 1$ in two different ways.
2. Compute the Fourier series for $f(x) = \sin 2x$ in two different ways.
3. Compute the Fourier series for $f(x) = 1 - \cos 2x + 2 \sin 3x$ in two different ways.
4. Let $f(x) = 1 - \cos 2x + 2 \sin 3x$. Compute $\|f\|^2$.
5. Suppose

$$s(x) = \begin{cases} 0 & \text{if } -\pi < x < 0 \\ 1 & \text{if } 0 \leq x \leq \pi. \end{cases}$$

Recall that the graph of $y = s(x)$ is the square wave.

- (a) Write down a function (using $s(x)$) whose graph is the following:



- (b) Now try this one:

