Dartmouth College
Mathematics 23 - Worksheet 24

1. Let $f(x) = 0$ when $-1 \leq x < 0$ and $f(x) = x$ when $0 \leq x < 1$. Assume that f is extended periodically to a function on $\mathbb{R}$. Sketch the graph of the function to which the Fourier series of f converges. (Show three periods.)

2. Let $f(x) = x$ when $0 \leq x < 1$ and $f(x) = 0$ when $1 \leq x < 2$.

   (a) Sketch the even extension of f to a function g of period 4.

   (b) Find the cosine series for f.

   (c) Sketch the odd extension of f to a function h of period 4.

   (d) Find the sine series for f.