Math 54 Worksheet 27
GSI: Lionel Levine
5/4/05

1. (a) Find the Fourier series for the function

$$f(x) = 2x, \quad 0 \le x < 2; \qquad f(x+2) = f(x).$$

   (b) Does the series converge when $x = 2n$ (n an integer)? If so what does it converge to?

2. Prove that

   (a) The product of two odd functions is even.
   (b) The derivative of an even function is odd.
   (c) The derivative of an odd function is even.

3. Express e^x as the sum of an odd function and an even function.