ENEE 241/MATH 242 Dr. Wolfe ASSIGNMENT #7 Due April 18, 2001

Readings: *Chapra & Canale* Sections 19.1,19.2,19.3,19.5.

1. Problem 19.1, p.544 *Chapra & Canale* .
2. Problem 19.4, p.544 *Chapra & Canale* .
3. Problem 19.6, p.545 *Chapra & Canale* .
4. Problem 19.8, p.545 *Chapra & Canale* . Use MATLAB to plot. Can you guess the pattern of coefficients ? What is the limit function ?
5. (Based on problem 19.20, p.545 *Chapra & Canale* .)
   (a) Use MATLAB to generate 64 points from $t = 0$ to $t = 2\pi - \pi/32$. Evaluate

   $$f(t) = \cos(3t) + \sin(10t)$$

   at these points. Apply the MATLAB function fft to this vector to obtain the vector F and explain the results.
   (b) Plot $|F(n)|$ against n. What does this plot show ?
   (c) Now let's add some noise to the system. Let

   $$g = f + rand(1, 64) - .5$$

   repeat parts (a) and (b) and interpret the results.
6. What is Gibbs phenomenon ?