Math 436, Fall 2000

Homework

Assignment 1, due Wednesday, August 30
p. 2, #2,4,5
p. 4, #2 (Note: The function should be $u(x, y) = e^{kx}e^{k^2y}$.)
p. 9 #1,3 (Note: In #1, the last condition should be $u_x(L; t) = 0$. In #3, the last term in the last condition should be $u(L; t)$.)
p. 10 #1-4
p. 13 #2,3
p. 17 #1,3
p. 21 #4

Assignment 2, Due Wednesday, September 6
p. 33 #3,5,8,10,15
p. 486 #4,5,6,8,9a,b,11a,b,12,14,15

Assignment 3, Due Wednesday, September 13
p. 486 #4,5,6,8,9a,b,11a,b,12,14,15
p. 476 #1,6,8,12,16,33

Assignment 4, Due Wednesday, September 20
p. 44 #1,5,16a,f,17a,f,32,33

Assignment 5, Due Wednesday, September 27
p. 54 #1,2,4,9,10,15,17,21,22
Also, graph D_N, $N = 5, 10, \ldots, 50$ by computer.

Assignment 6, Due Wednesday, October 4
p. 69 #4,5,6,9,10,11,14
p. 75 #1-3,7,8,11,12 (Note: There's a typo in #11(b). It should be

$$-\phi(N) \leq \sum_{N+1}^{\infty} \phi(n) - \int_N^{\infty} \phi(x)\, dx.$$

As a result, the left side in #12(a) should be $\frac{-1}{N^s}$.)
p. 83 #3-5

Graph the partial sum f_{2N-1} of the Fourier series of the function

$$f(x) = \begin{cases} 1 & x \in (0, \pi] \\ -1 & x \in [-\pi, 0) \end{cases}$$

for $N = 10, 50$, and one significantly larger value.

Assignment 7, Due Wednesday, October 11

p. 108 #3,7,10,12,13,15,17,21
Although these problems won't be due until after the midterm, some of them are a good reminder of some of the material in Chapter 0.

Assignment 8, Due Wednesday, October 25

p. 120 #1,3,5-9,12,14
p. 133 #1,3,4,11

Assignment 9, Due Wednesday, November 1

p. 150 #1,2,5,6,11,13,17,18

Assignment 10, Due Wednesday, November 8

p. 168 #1,3,4,7,9,13-15

Assignment 11, Due Wednesday, November 15

p. 181 #13,15,16,18,24

Use Maple, Mathematica, or Matlab to graph the Poisson kernel for the unit disk (i.e., $R = 1$) with $r = .5,\ r = .9,\ r = .99$ and $r = .999$. Make sure that your graphs are reasonable.

Here is a tentative list of the remaining assignments.

Assignment 12, Due Wednesday, November 22
p. 292 #5,7,13,16,19

Assignment 13, Due Wednesday, December 6
p. 308 #6,7,8,15,17

Use Maple, Mathematica or Matlab to graph the Gauss-Weierstrass kernel with $K = 1$ for $t = 10,\ t = 1,\ t = .1,\ t = .01,\ t = .001,\ t = .0001,\ t = .00001, t = .000001,\ t = .0000001$. Make sure that your graphs are reasonable.